Vol. 884 Number 5

OFFICIAL GAZETTE

of the
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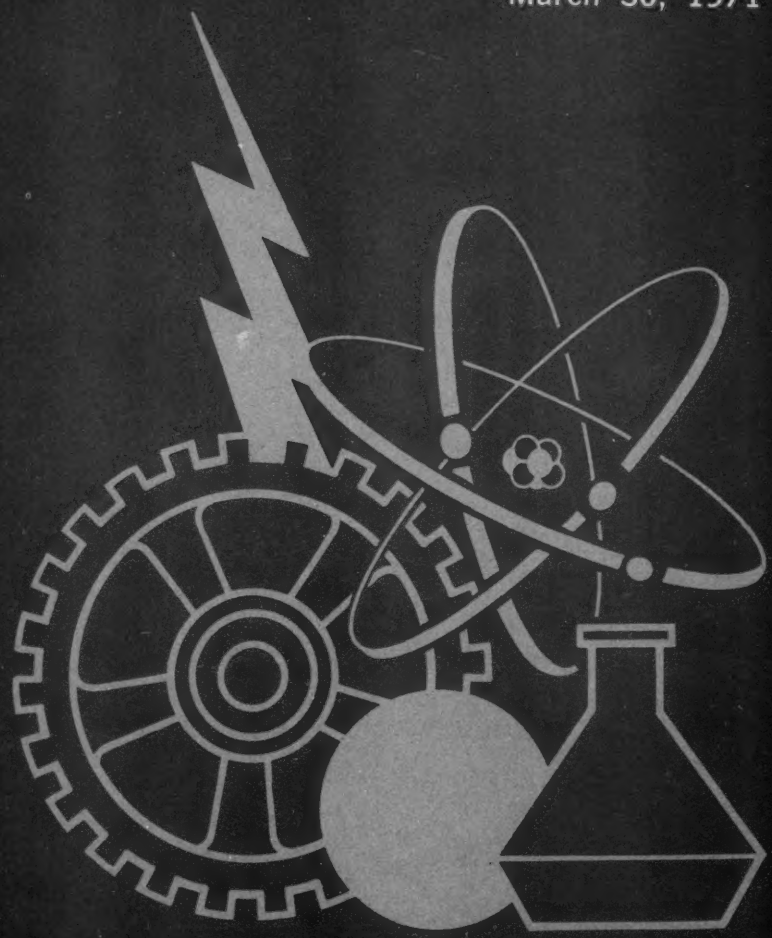
PATENTS

March 30, 1971



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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

March 30, 1971 Volume 884 Number 5

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PATENT OFFICE NOTICES

Certificates of Correction for the Week of Mar. 30, 1971

Re. 26,661	3,530,763	3,542,002	3,547,616
Re. 26,998	3,531,121	3,542,007	3,547,664
3,321,667	3,531,787	3,542,030	3,547,669
3,403,119	3,531,797	3,542,183	3,547,769
3,449,554	3,531,960	3,542,395	3,547,816
3,485,762	3,532,602	3,542,448	3,547,920
3,488,402	3,532,609	3,542,698	3,548,534
3,493,915	3,533,182	3,542,724	3,548,697
3,495,095	3,533,213	3,542,817	3,549,137
3,496,184	3,533,304	3,542,895	3,549,224
3,499,020	3,533,491	3,543,421	3,549,266
3,500,153	3,533,690	3,543,689	3,549,462
3,503,977	3,533,791	3,543,700	3,549,527
3,503,989	3,533,997	3,543,735	3,549,589
3,504,308	3,535,232	3,543,918	3,549,629
3,506,676	3,535,545	3,544,284	3,549,948
3,507,799	3,535,768	3,544,523	3,549,957
3,516,997	3,536,242	3,544,557	3,550,040
3,517,036	3,536,560	3,544,673	3,550,075
3,519,906	3,536,611	3,544,861	3,550,488
3,524,548	3,536,813	3,545,444	3,550,641
3,524,742	3,536,950	3,545,533	3,551,205
3,525,150	3,537,288	3,546,023	3,551,309
3,525,234	3,537,471	3,546,157	3,551,766
3,525,533	3,538,020	3,546,161	3,552,816
3,527,867	3,538,315	3,546,231	3,552,826
3,527,996	3,539,335	3,546,506	3,553,517
3,528,765	3,539,567	3,546,813	3,553,579
3,528,988	3,540,062	3,547,047	3,553,640
3,529,045	3,540,723	3,547,127	3,553,995
3,529,210	3,540,998	3,547,182	3,554,359
3,529,228	3,541,063	3,547,295	3,556,768
3,530,220	3,541,985	3,547,319	3,557,102
3,530,510	3,541,995	3,547,333	3,557,250

Patents Available for Licensing or Sale

2,978,003. FLOATING MUSHROOM ROOT TRIMMING MACHINE. William S. Benekam, 633 Valley Ave., Atglen, Pa., 19310.

3,362,415. CIGARETTE HOLDER. Guy D. Ellis, 408 N. 16th St., Kansas City, Kans., 66102.

3,463,371. DISPENSING DEVICE. Hans F. Geiger, 5845 N. New Jersey St., Indianapolis, Ind., 46220.

3,496,701. METHOD AND APPARATUS FOR REMOVING PARTICULATES FROM FLOWING GASES. T. G. Owe BERG, 14361 Deanann Place, Garden Grove, Calif., 92640.

3,526,157. COMBINATION OF CIRCULAR SAW JOINTER AND VISE. Ezra Rachal, 303 Powell Ave., Monroe, La., 71201.

3,534,789. EDGER SET WORKS. Woodrow Morris, Rte. 2, Vanceboro, N.C., 28586.

3,535,667. ELECTRICAL SAFETY DEVICE. Henry C. Harnish, Jr., and Anthony J. Osello, Elcock Ave., Boonton, N.J., 07005.

3,546,945. FLUID SAMPLER. William H. Collins, 1002 Chipley St., Baker, La., 70714.

3,548,504. SIGHTING DEVICE FOR ESTABLISHING A LINE OF SIGHT. Russell F. Sykes, 303 Palmcrest Road, North Syracuse, N.Y., 13212.

The following 3 patents are offered by: John W. Barnd, 32 Gollybrook Road, Paramus, N.J.

3,351,128. MULTI-ZONE TEMPERATURE CONTROL.

3,496,991. FLUID TEMPERATURE REGULATING METHOD AND APPARATUS.

3,515,345. MULTI-ZONE TEMPERATURE CONTROL.

General Electric Company is prepared to grant non-exclusive licenses under the following 11 patents upon reasonable terms to domestic manufacturers.

Applications for license under the following patent may be may be addressed to: Patent Counsel, Mobile Radio Department, General Electric Co., Lynchburg, Va., 24502.

3,453,053. ELECTRONIC SINGLE-POLE, DOUBLE-THROW SWITCH.

Applications for license under the following patent may be addressed to: Patent Counsel, Metallurgical Products Department, General Electric Co., Box 237–GPO, Detroit, Mich., 48232.

3,550,051. SPEAKER MAGNET HAVING CURVED PREFERRED DIRECTION OF MAGNETIZATION.

Applications for license under the following patent may be addressed to: Division Patent Counsel, Power Transmission Division, General Electric Co., 6901 Elmwood Ave., Philadelphia, Pa., 19142.

3,545,538. SELF-SUPPORTING PARALLEL TUBULAR STRUCTURE AND METHOD OF FORMING THE SAME.

Applications for license under the following 3 patents may be addressed to: Patent Counsel, Communication and Control Device Products Dept., General Electric Co., Waynesboro, Va., 22980.

3,499,168. VOLTAGE REGULATING CIRCUIT WITH REACTOR SENSING MEANS.

3,535,615. POWER CONTROL CIRCUITS INCLUDING A BI-DIRECTIONAL CURRENT CONDUCTING SEMICONDUCTOR.

3,549,971. REVERSING CONTROLLER.

Applications for license under the following 5 patents may be addressed to: General Electric Company, Appliance Components Division, 1635 Broadway, Fort Wayne, Ind., 46804, Attention: Patent Counsel.

2,866,025. NON-BOUNCING SWITCHING APPARATUS.

2,993,099. RANGE TIMER.

3,038,041. RANGE TIMER.

3,147,401. ELECTRIC IGNITION DEVICE.

3,169,177. CAM OPERATED RANGE TIMER SWITCH.

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
F. H. BRONAUGH, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF MARCH 9, 1971

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	9-29-69
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	4-30-69
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	11-12-69
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	12-02-69
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—W. B. KNIGHT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	7-22-69
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Miscellaneous.	5-26-70
SECURITY, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	7-09-69
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	12-04-69
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	1-27-70
PHYSICS, GROUP 280—R. L. EVANS, Director. Photography; Sound and Lighting; Indicators and Optics; Measuring and Testing; Geometrical Instruments.	11-17-69
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	5-18-70
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Railways and Railway Equipment; Brakes; Rigid Flexible and Special Receptacles and Packages.	12-15-69
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	10-27-69
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	11-03-69
HEAT, POWER AND FLUID ENGINEERING, GROUP 340—C. F. GAREAU, Director. Power Plants; Combustion Engines; Fluid Motors; Pumps; Turbines; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Vaporizing; Temperature and Humidity Regulation; Machine Elements; Power Transmission; Fluid Handling; Lubrication; Joint Packing.	3-19-70
CONSTRUCTIONS, SUPPORTS, TEXTILES, CLEANING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Receptacles; Supports; Cabinet Structures; Centrifugal Separations; Cleaning; Coating; Pressing; Agitating; Foods; Textiles; Apparel and Shoes; Sewing Machines; Winding and Reeling.	1-06-70

Expiration of patents: The patents within the range of numbers indicated below expire during March 1971, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,670,468 to 2,673,977, inclusive
Plant Patents..... Numbers 1,260 to 1,266, inclusive

REISSUES

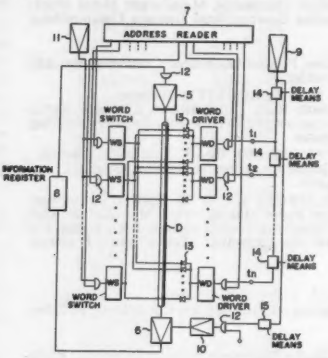
MARCH 30, 1971

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

27,099
MAGNETIC MEMORY DEVICE

Katsuro Nakamura, Tokyo, Japan, assignor to Toko Kabushiki Kaisha, Tokyo-to, Japan

Original No. 3,408,639, dated Oct. 29, 1968, Ser. No. 458,845, May 24, 1965. Application for reissue Jan. 23, 1970, Ser. No. 5,405
Claims priority, application Japan, May 25, 1964, 39/29,241
Int. Cl. G11c *5/02, 11/14*
U.S. Cl. 340—174 5 Claims



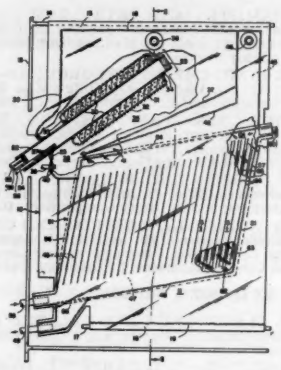
A magnetic memory device comprising a plurality of laminated memory planes, each consisting of a plurality of transverse magnetic wires provided with magnetic films and a plurality of longitudinal conductors intersecting said magnetic wires. The wires and conductors act as either information lines or word lines, corresponding information in the respective planes being connected in series; a word drive commanding pulse generating circuit and a plurality of delay means having progressively different delay times extending between the word drive command pulse generating circuit and the word lines thereby to compensate for the time required for signals to travel through said information lines.

27,100
OXYGENATOR WITH HEAT EXCHANGER

Richard A. De Wall, Dayton, Ohio, assignor to Bentley Laboratories, Inc., Santa Ana, Calif.

Original No. 3,256,883, dated June 21, 1966, Ser. No. 300,757, Aug. 8, 1963. Application for reissue June 20, 1968, Ser. No. 741,813
Int. Cl. A61m *1/03*; A61f *7/00*
U.S. Cl. 23—258.5 19 Claims

17. A blood oxygenator comprising a pair of opposed plastic side wall members secured together in face-to-face abutting relation, an upper chamber formed by the confronting interior surfaces of said members, a bubbler tube inclined upwardly in said chamber from one side margin of said members, said bubbler tube having discharge port means therein and being provided with blood and oxygen inlets in the lower end of said bubbler tube, a porous mass of defoaming material surrounding said tube about said port means, said upper chamber being provided with a downwardly sloping bottom below said bubbler tube for receiving the gravity flow of blood from said bubbler tube, a temperature control chamber below said upper chamber formed by said interior surfaces of said members, a passageway adjacent the lower end of said downwardly sloping bottom to receive the gravity flow of blood from the downwardly sloping bottom of said upper chamber and to conduct the gravity flow of blood to the upper side of



said temperature control chamber, a water jacket in said temperature control chamber having a water inlet and a water outlet, said temperature control chamber having a downwardly sloping bottom, a blood outlet at the lower end of said sloping bottom, and gas vent means for said chambers.

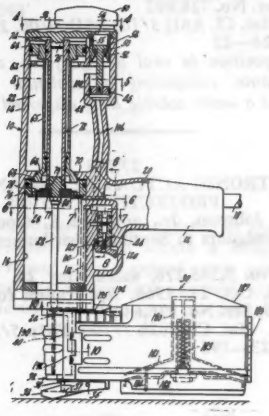
27,101
FASTENER DRIVING APPARATUS

George A. Maynard, East Greenwich, R.I., assignor to Textron Inc.

Original No. 3,259,292, dated July 5, 1966, Ser. No. 352,494, Mar. 17, 1964. Application for reissue Apr. 26, 1967, Ser. No. 637,028
Int. Cl. B27f *7/06*
U.S. Cl. 227—8 37 Claims

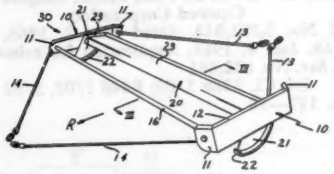
A fastener driving apparatus is disclosed which has a fastener sensing member mounted in the drive track to be moved into an operative position by engagement of a fastener therewith in response to the movement of a fastener by a fastener feeding mechanism laterally into the drive track into a proper position to be driven longitudinally outwardly therefrom by a pneumatically operated fastener driving element. The apparatus includes a pneumatic circuit, actuation of which is manually controlled by digital movement of a trigger, the operation of the circuit being dependent upon the movement of the fastener sensing member into its operative position so that if no fastener is presented on proper position to be driven, the fastener driving element will not be pneumatically operated. The pneumatic circuit is operable to return the fastener driving element after the fastener has been driven thereby without the necessity of digitally releasing the trigger and again operating the fastener driving element to drive another fastener when the trigger is not released thereby rendering the apparatus capable of automatically

driving a sequence of fasteners as the device is moved along and against a workpiece. The preferred fastener feeding mechanism disclosed is operable to handle a conical cylindrical fastener package including a multiplicity of common nails interconnected in series in parallel relation by a pair of parallel flexible frangible wires welded to the shanks of the nails and includes a frusto-conical



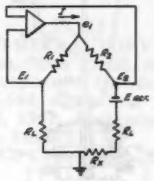
support member for supporting the conical cylindrical package of nails by engagement of the points therewith and a turret member mounted for incremental step-by-step rotary movement about a central axis parallel with the axis of the drive track operable to feed successive nails into the drive track and to effect severance of the wires during the driving movement of the nail.

27,102
MANURE SCRAPER
Robert L. Van Huis, Zeeland, Mich., assignor to U.S. Industries, Inc., New York, N.Y.
Original No. 3,409,120, dated Nov. 5, 1968, Ser. No. 525,259, Feb. 4, 1966. Application for reissue July 24, 1969, Ser. No. 853,562
Int. Cl. B65g *25/08*
U.S. Cl. 198—224 **8 Claims**



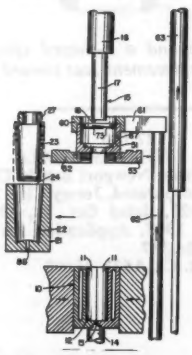
A manure scraper having a pair of spaced support frames with a scraper blade pivotably mounted therebetween. Rigidly attached to each end of and pivotable with the scraper blade is a rigid panel adapted to slidably abut the bottom of the pit. The panel is circular in peripheral configuration such that it causes the blade to pivot to a non-working position when the device is pulled in a first direction and to a working position when the device is pulled in an opposite direction.

27,103
BRIDGE CIRCUIT FOR DETERMINING THE INVERSE OF RESISTANCE
Dexter E. Cate, Fairhaven, Mass., assignor to Buzzards Corporation, Marion, Mass.
Original No. 3,341,757, dated Sept. 12, 1967, Ser. No. 564,075, July 11, 1966. Application for reissue Sept. 9, 1969, Ser. No. 870,308
Int. Cl. G05b *1/06*
U.S. Cl. 318—663 **14 Claims**



A bridge circuit for use in servo systems, provides a current flow which is a linear function of the inverse of a resistance connected in one of the bridge arms. A source of reference voltage is connected in one of the bridge arms and means are provided to maintain the bridge in a null condition and to control the current in the bridge circuit to achieve the desired inverse relationship between the current and resistance.

27,104
APPARATUS FOR BLOW MOLDING SEAMLESS HOLLOW OBJECTS
Emery I. Valyi, 5200 Sycamore Ave., Riverdale, N.Y. 10471
Original No. 3,364,521, dated Jan. 23, 1968, Ser. No. 484,224, Sept. 1, 1965. Application for reissue Dec. 22, 1969, Ser. No. 887,279
Int. Cl. B29d *23/03*
U.S. Cl. 18—5 **5 Claims**

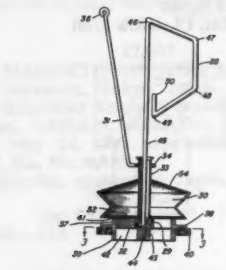


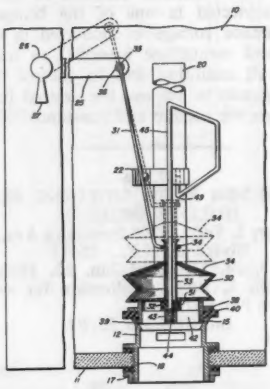
A one-piece blow mold having a top opening through which a blow core carrying a parison is inserted. The blow mold is shifted into and out of the path of the blow core as the latter is transferred axially from a parison die into blow position.

27,105
REPLACEMENT FLUSH VALVE
Phillip J. Brewington, 6902 Manchana Road, Austin, Tex. 78745
Original No. 3,263,240, dated Aug. 2, 1966, Ser. No. 379,311, June 30, 1964. Application for reissue July 12, 1968, Ser. No. 747,027
Int. Cl. E03d *1/34*
U.S. Cl. 4—57 **5 Claims**

Disclosed is a replacement flush valve assembly to replace a worn ball closure and add a new valve seat,

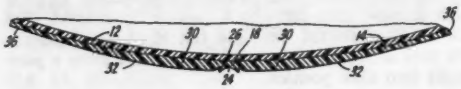
while retaining the old valve seat and including a new ball closure. The assembly has a member coaxial with the old valve seat and the outlet closure pipe to receive





the new ball closure and a P-shaped spring means to resiliently urge the replacement seat toward said retained valve seat.

27,106
ATHLETIC GAME BALL
Robert Bruce Henderson, Newport Beach, Calif., assignor to AMF Incorporated, Jersey City, N.J.
Original No. 3,475,027, dated Oct. 28, 1969, Ser. No. 509,547, Nov. 24, 1965. Application for reissue Feb. 26, 1970, Ser. No. 14,387
Int. Cl. A63b *41/08*
U.S. Cl. 273—65 **18 Claims**

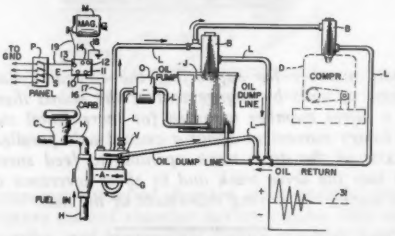


A game ball such as a basketball or football having a cover including simulated seams which divide the cover into separated cover panels. The seams are in the form of ribs which project upwardly from the cover and include concave top walls and straight side walls. The central surface areas of the panels form a symmetrical surface of revolution. The peripheral portions of the panels include first inwardly depressed parts adjacent their junctures with the seam simulating ribs and second more remote parts which are thicker than the central parts of the panels and extend outwardly beyond the symmetrical surface of revolution formed by the central surface areas of the panels.

27,107
DRUG COMPOSITION
Charles L. Levesque, Philadelphia, Pa., assignor to Rohm & Haas Company, Philadelphia, Pa.
Original No 2,987,455, dated June 6, 1961, Ser. No. 766,496, Oct. 10, 1958. Application for reissue May 1, 1968, Ser. No. 728,092
Int. Cl. A61j *3/10;* **A61k** *9/00, 27/12*
U.S. Cl. 424—22 **32 Claims**

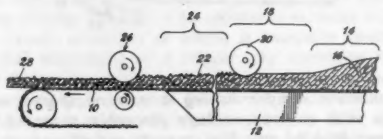
A composition in oral dosage form, and method of making same, comprising a particular porous plastic matrix and a water soluble drug dispersed in said matrix.

27,108
ELECTRONIC ACTUATOR FOR AN ENGINE PROTECTIVE SYSTEM
Ralph B. Johnson, Jr., and Joe E. Goodwin, Denver, Colo., assignors to Sentinel Distributors, Inc., Denver, Colo.
Original No. 3,385,278, dated May 28, 1968, Ser. No. 585,798, Oct. 11, 1966. Application for reissue Nov. 12, 1969, Ser. No. 875,644
Int. Cl. F02b *77/00;* **F01p** *5/14*
U.S. Cl. 123—198 **15 Claims**



The flow of fuel to an internal combustion engine is controlled to provide a safety shut down of the engine in response to a malfunction of the engine or an accessory device driven by the engine. A solenoid operated valve is connected in the fuel supply system and has its operating coil adapted to be energized by an electronic sensing circuit which monitors operation of the engine or the accessory device.

27,109
METHOD [AND APPARATUS] FOR PRODUCING SPECIAL SURFACES ON PANEL BOARD
Otis R. Videen, St. Paul, Minn., assignor to Conwed Corporation
Original No. 3,391,013, dated July 2, 1968, Ser. No. 423,168, Jan. 4, 1965. Application for reissue Feb. 6, 1969, Ser. No. 822,081
Int. Cl. B28b *5/00;* **B44d** *1/02, 5/02*
U.S. Cl. 117—10 **2 Claims**



In the production of an acoustical product having plural layers and an irregular top surface, the surface layer is simultaneously doctored onto a lower carrying layer and provided with an irregular top surface by a rotating roll arranged at an angle to the movement of the carrier material.

27,110
TRANSISTOR ELEMENT AND TRANSISTOR CIRCUIT

Johannes Meyer Cluwen, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Original No. 3,299,281, dated Jan. 17, 1967, Ser. No. 395,550, Dec. 1, 1953. Application for reissue Sept. 3, 1968, Ser. No. 760,391

Claims priority, application Netherlands, Dec. 1, 1952, 174,267

Int. Cl. H011 *13/00;* **H03k** *5/20*

U.S. Cl. 307—303 **22 Claims**

A universal transistor element capable of many applications. The element includes within a semiconductor body at least first and second spaced zones spaced from a third zone, and one or two base electrode connections to the body material. The spacing of the first and second zones to the third zone is smaller than a diffusion length enabling transistor action to take place between each of the first and second and the third zones, but the spacing between the first and second zones is greater than a diffusion length preventing direct transistor action. With two base electrodes, the application of a voltage thereacross enables control to be exercised over the internal transistor action.

27,111
PITCH-BONDED REFRACTORY COMPOSITION

Roger E. Wilson, Silver Spring, Md., assignor to Basic Incorporated, Cleveland, Ohio

Original No. 3,236,664, dated Feb. 22, 1966, Ser. No. 187,188, Apr. 13, 1962. Application for reissue Mar. 19, 1969, Ser. No. 822,075

Int. Cl. C04b *35/04, 35/52*

U.S. Cl. 106—56 **18 Claims**

A pitch-bonded refractory composition having high strength and increased density comprising basic refractory particles, about 4% to about 10% by weight based on the weight of the total admixture of a carbonaceous material to bind said particles together, and approximately 0.5 to about 10% by weight based on the weight of the total admixture of a finely divided carbon black, at least a part of said carbon black being thermal black.

PATENTS

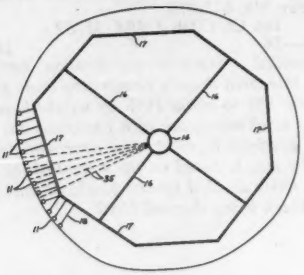
GRANTED MARCH 30, 1971

GENERAL AND MECHANICAL

3,572,436
METHOD FOR RECOVERING PETROLEUM

Frederick W. Riehl, 2347 Albion, Denver, Colo.

Filed Jan. 17, 1969, Ser. No. 791,961
Int. Cl. E21b *43/24*
U.S. Cl. 166—252 24 Claims

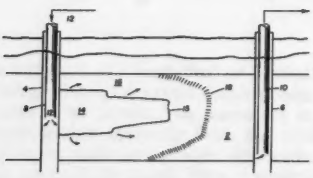


A method for recovering petroleum in the secondary or in the partially depleted primary recovery stages comprises the introduction of high pressure, high temperature superheated steam into the peripheral zone of a dome type formation, the steam being introduced through substantially equally spaced wells about the periphery of the formation. The steam is introduced until the entire formation has been heated to a predetermined temperature range, the viscosity of the petroleum is reduced and the petroleum flows downwardly toward the peripheral or bottom zone of the formation. Steam is introduced continuously to make up losses during the period of production and steam pressure and temperature are maintained until production is complete. The major loss of heat is that resulting from the removal of petroleum from the formation and control of the predetermined temperature range is effected by maintaining a heat balance, steam being added as required to supply all losses during production.

3,572,437
OIL RECOVERY BY STEAM INJECTION FOLLOWED BY HOT WATER

James E. Marberry, Calgary, Alberta, Canada, and Henry C. Coutret, Jr, Shreveport, La., assignors to Mobil Oil Corporation

Filed Feb. 14, 1969, Ser. No. 799,177
Int. Cl. E21b *43/24*
U.S. Cl. 166—272 13 Claims

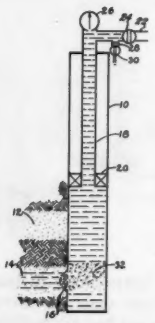


This specification discloses methods of recovering oil from subsurface oil reservoirs penetrated by at least an injection and a production well. Steam is injected into the reservoir to form a steam zone intermediate the injection and production wells. Subsequently hot water at the same temperature as the injected steam is injected into the reservoir to fill the steam zone. Thereafter cold water is injected into the reservoir to drive the hot water toward the production well and oil is recovered from the reservoir via the production well.

3,572,438
PROCESS OF PLUGGING PERFORATIONS IN A WELL CASING

Gordon S. Rohe, 908 San Jacinto Bldg., Houston, Tex.

Filed Feb. 26, 1969, Ser. No. 802,364
Int. Cl. E21b *33/138, 43/14*
U.S. Cl. 166—285 13 Claims



Wells may be recompleted at different formations either above or below existing perforations by a process which may include pumping a slug of cement down through the tubing, the well having either oil or water in it, to force the cement out through the existing perforations into the formation. A pressure drop signals when the cement has passed through the perforations. A measured amount of liquid may then be withdrawn from the well so that the formation will force the cement back out through the perforations. The cement may then be allowed to set up to plug the perforations.

3,572,439
CONCENTRATES FOR THE PREPARATION OF AMMONIATED FOAMED CIRCULATION FLUIDS AND USE THEREOF

Stanley O. Hutchison, Bakersfield; Glen W. Anderson, Oildale, and John C. Mc Kinnell, Taft, Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of application Ser. No. 720,977, Apr. 12, 1968, now Patent No. 3,486,560. This application Apr. 7, 1969, Ser. No. 814,168
Int. Cl. E21b *21/04*; C11d *1/14*
U.S. Cl. 166—309 24 Claims

The use of ammoniated concentrates for the preparation of ammoniated gas-in-liquid foams for circulation in a well and ammoniated concentrated compositions of anionic oxidized-sulfur containing foaming agents in water or water lower alkanol solvent mixtures.

3,572,440

AQUEOUS FOAMED WELL CIRCULATION FLUIDS CONTAINING AN ACID COMPONENT AND THEIR USE IN THE TREATMENT OF WELLS

Stanley O. Hutchison, Bakersfield; John C. Mc Kinnell, Taft, and Glen W. Anderson, Oildale, Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 704,832, Feb. 12, 1968, Pat. No. 3,463,231, and Ser. No. 720, 977, April 12, 1968, Pat. No. 3,486,560

Filed July 7, 1969, Ser. No. 839,662

Int. Cl. B01j *13/00*; E21b *43/27*

U.S. Cl. 166—311 19 Claims

Preformed well circulation foams containing an acid component are used for the treating of wells, particularly for the stimulation of oil wells.

3,572,441

LIQUID DISCHARGE TANK ADAPTED TO BE HUNG AND TRANSPORTED

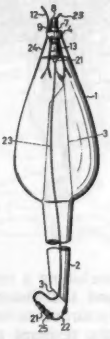
Masuzoh Nodegi, Tokyo, Japan, assignor to Takashima Kahashiki Kaisha, Tokyo, Japan

Filed May 13, 1969, Ser. No. 824,037

Claims priority, application Japan, May 15, 1968, 43-32675

Int. Cl. A62c *5/00*

U.S. Cl. 169—2 3 Claims



A liquid discharge tank adapted to be hung from a helicopter can be filled with a fire extinguisher liquid when a tubular extension having a discharge part is withdrawn into the tank body and secured to the upper portion of the tank body. The fire extinguisher liquid is discharged from the tank by releasing the extension from the upper portion of the tank body so that it projects downwardly from the tank body.

3,572,442

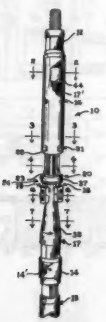
ARRESTING DEVICE FOR DOWNHOLE TOOLS

Charles A. Templeton, Odessa, Tex.

Filed Sept. 8, 1969, Ser. No. 856,129

Int. Cl. E21b *23/00*

U.S. Cl. 166—212 10 Claims



An arresting device for downhole tools comprising a mandrel which is reciprocatingly received within a barrel. The mandrel has spaced apart wall engaging means disposed thereabout and connected to the barrel. An expansion means associated with the mandrel causes the wall engaging means to outwardly extend into contact with the inside peripheral wall surface of a borehole while at the same time engaging a portion of the mandrel, whereby, inadvertent upward movement of the arresting device causes the expansion means to outwardly extend the wall engaging means to thereby arrest upward movement of the device within a borehole.

3,572,443

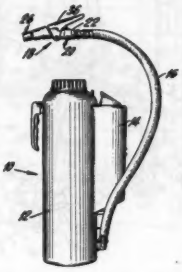
METHOD OF AND APPARATUS FOR PRODUCING A STREAM OF DRY CHEMICAL PARTICLES

Arthur B. Guise, Marinette, Wis., and Garry O. Hanson, Menominee, Mich., assignors to The Ansul Company, Marinette, Wis.

Original application July 19, 1966, Ser. No. 566,383, now Patent No. 3,447,610. Divided and this application Dec. 30, 1968, Ser. No. 793,639

Int. Cl. A62c *13/00*

U.S. Cl. 169—31 4 Claims



A method of discharging a fire-extinguishing composition is disclosed comprising the steps of propelling a fluidized mixture of fire-extinguishing agent and inert gas through a converging zone, then through a throat area which maximizes the linear velocity of the dry chemical fire extinguisher particles and finally through a divergent zone having an included angle of divergence of not less than 8° and not more than 12°.

3,572,444

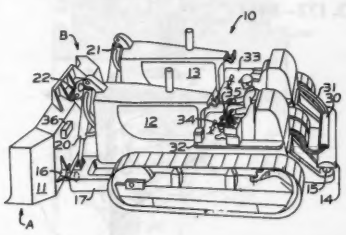
ANGLE CONTROL SYSTEM FOR ELEMENTS ON UNITIZED TRACTOR ASSEMBLIES

Rolland D. Scholl, Peoria, and Robert N. Stedman, Chillicothe, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 25, 1969, Ser. No. 819,217

Int. Cl. E02f *3/76*

U.S. Cl. 172—4.5 6 Claims



Tractors connected in a side-by-side relationship to form unitized assemblies often have an adjustable, transverse earthworking element connected on opposite sides of the unitized assembly which is difficult to control due to the

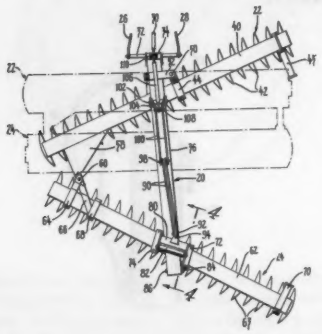
universal connections between the tractors. In such an assembly, an angle control system for the transverse element which maintains one end of the element at a preselected angular relationship to a manually controlled end of the element greatly enhances the productive capability. The angle control system, in combination with the unitized assembly, employs an electrolytic potentiometer as a sensor and a closed digital loop circuit to operate controls on adjusting mechanisms on one end of the transverse element to maintain a preselected angular relationship between the controlled end and its manually controlled end.

3,572,445

LIFT TYPE DISK HARROW

Clarence B. Richey, Fresno, and Ronald E. Rasmussen, Sanger, Calif., assignors to Massey Ferguson, Inc., Des Moines, Iowa

Filed Nov. 5, 1968, Ser. No. 783,445
Int. Cl. A01b *59/06, 63/02*
U.S. Cl. 172—445 **13 Claims**



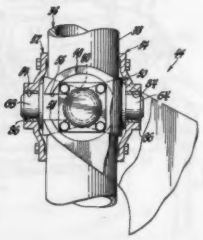
An offset disk harrow adapted to be connected to a three point tractor hitch which has a frame with a mast and a hitch beam, a front gang pivotally attached to the front of the frame and rear gang pivotally attached to one end of the front gang and slidably connected to the rear portion of the hitch beam. A mechanical linkage extends between the harrow and the tractor in such a manner that when the tractor operator causes the harrow to lift, both gangs are automatically folded forward into a position perpendicular to the centerline of the tractor. Another version uses a hydraulic cylinder to fold the gangs.

3,572,446

HYDRAULIC CYLINDER MOUNTING ASSEMBLY

Janis Mazzarins, Macedonia, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 24, 1968, Ser. No. 770,229
Int. Cl. E02f *3/76*
U.S. Cl. 172—804 **3 Claims**



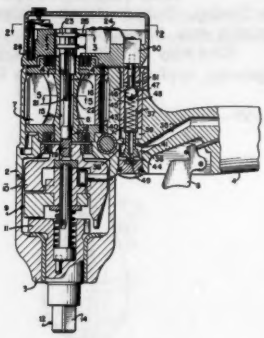
A mounting assembly for universally supporting the cylinder member of a hydraulic lift jack on a tractor. The mounting assembly includes a collar which surrounds the cylinder member and has four radially outwardly extending pivot pins formed therewith along mutually perpendicular pivot axes. A pair of the pivot pins are rotatably supported within a support bracket rigid with the tractor, while the other pair of pivot pins are journaled in support members rigidly secured to the cylinder member so that the hydraulic jack is movable about the aforesaid perpendicular axes during adjustable movement of a dozer blade.

3,572,447

TORQUE MEASURING SYSTEM FOR IMPACT WRENCH

Reginald W. Pauley, Belle Mead, and Leo Kramer, Skillman, N.J., assignors to Ingersoll-Rand Company, New York, N.Y.

Filed Nov. 12, 1968, Ser. No. 775,011
Int. Cl. B23q *5/00*
U.S. Cl. 173—12 **10 Claims**



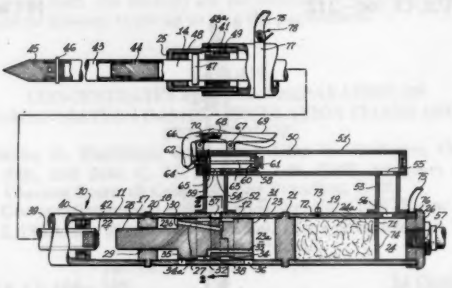
An impact wrench including a resilient member disposed between the motor and the fastener driving spindle and adapted to yield under torque to measure the torque load. The torque load on the resilient member is measured by means such as an electrical strain gauge which operates a valve to stop the tool in response to the rise of the torque load to a selected magnitude.

3,572,448

PNEUMATIC IMPACT TOOL

Joseph Marcenuk, 7492 Wiltshire Drive, North Surrey, British Columbia, Canada

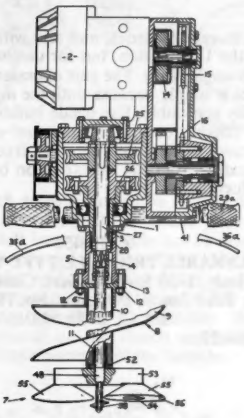
Filed Mar. 24, 1969, Ser. No. 809,849
Int. Cl. B25d *7/00, 9/04, 17/04*
U.S. Cl. 173—115 **9 Claims**



The invention relates to lightweight scaling tools for scaling loose hanging rocks in mine areas and the like. The

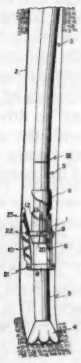
device includes a cylindrical wall forming a piston chamber and a piston reciprocally mounted therein. The piston is reciprocated by fluid under pressure, suitable passages being provided in the piston itself which cooperate with radial ports in the cylindrical wall. The piston actuates a reciprocally mounted striker bar which engages the loose rocks.

3,572,449
MACHINES FOR BORING HOLES
Alexander Norman Brocas, Mount Roskill, Auckland, and Arthur John Wildy, Mount Wellington, Auckland, New Zealand, assignors to said Wildy assor to Mason & Porter Limited, Mount Wellington, Auckland, New Zealand
Filed Nov. 27, 1968, Ser. No. 779,347
Claims priority, application New Zealand, Nov. 29, 1967, 150,871
Int. Cl. E21b *7/00*
U.S. Cl. 175—57 **16 Claims**



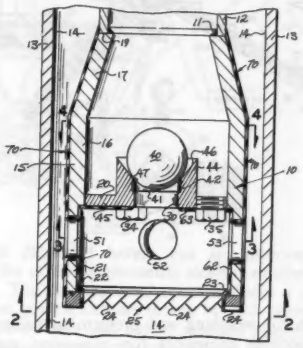
The boring of holes in which a machine provided with a rotatable cutter and a rotatable clearing device is manipulated so that the clearing device is rotated in a direction opposite to the direction of the cutter with the clearing device following the cutter into a hole formed by the cutter. The torque reaction of the cutter is balanced against the torque reaction of the clearing device whereby under normal operating conditions little controlling moment need be applied for holding the machine during boring.

3,572,450
WELL DRILLING APPARATUS
Derry R. Thompson, Box 1052, Kenai, Alaska
Filed Oct. 4, 1968, Ser. No. 765,137
Int. Cl. E21b *7/08, 7/10*
U.S. Cl. 175—76 **18 Claims**



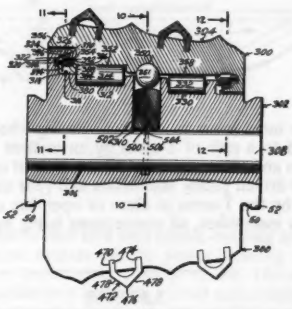
Apparatus for drilling directional bore holes in the earth and for preventing or correcting lateral drift in bore holes comprising at least one undergauge stabilizer blade and at least one movable stabilizer blade connected to a drill string sub so that flow of drilling mud through an orifice valve in the drill string forces the movable stabilizer blade outward and into contact with the wall of the bore hole, thus urging the drill string toward the opposite wall of the bore hole. The apparatus may be used alone or in pairs to alter the direction of the bore hole.

3,572,451
HYDRAULIC JET STREAM DRILLER
Conley B. Copeland, Box 356, Kingfisher, Okla.
Filed Oct. 23, 1968, Ser. No. 769,914
Int. Cl. E21b *41/00;* **F21c** *15/00;* **F21b** *7/18*
U.S. Cl. 175—317 **21 Claims**



This invention comprises an hydraulic jet stream driller that utilizes a column of drilling mud to supply pressure fluid to three hydraulic drilling jet orifices that are radially spaced from each other within a circle of cutting teeth. The novel tool is preferably clad with galvanized rubber to protect the same from erosion due to the hydraulic and other attrition forces acting on the tool.

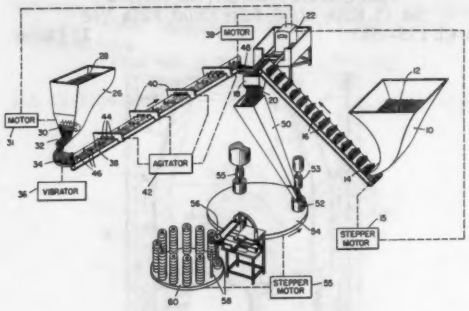
3,572,452
ROLLING CUTTER AND SEALS THEREFOR
Dougles F. Winberg, 9861 Vineyard Crest, Bellevue, Wash.
Filed Apr. 16, 1969, Ser. No. 816,661
Int. Cl. E21b *9/08*
U.S. Cl. 175—371 **24 Claims**



In cutters having a rolling cutter and a journal around which the cutter rolls there are bearing members. In cutting rock and earth formations it is necessary to keep out the rock, earth, and extraneous material from the bearings. This invention is directed to seals for sealing the bearings in their

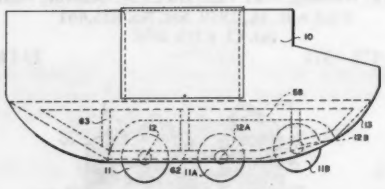
working cavity in the cutter so that dirt, rock, and extraneous material cannot reach the bearing and harm and damage the bearing surfaces.

3,572,453
AUTOMATIC TWO STAGE WEIGHING AND PREFORMING OF EQUIPMENT
Joseph R. Hannum, Norristown, Pa., assignor to The Budd Company, Philadelphia, Pa.
Filed Nov. 29, 1968, Ser. No. 779,835
Int. Cl. G01g *13/02*
U.S. Cl. 177—123 **5 Claims**



A system for weighing and preforming material includes first and second conveyors for conveying material to a weighing device. Means are associated with one of the conveyors to separate fibers of the material to permit fine weighing of the material prior to preforming it into an article.

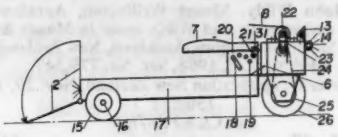
3,572,454
VEHICLE AND STEERING MECHANISM THEREOF
Andrew O. Siren, 10011 Fairmount Drive,S.E., Calgary, Alberta, Canada
Continuation-in-part of application Ser. No. 801,584, Feb. 24, 1968, now abandoned. This application May 15, 1969, Ser. No. 824,988
Int. Cl. B62d *11/02*
U.S. Cl. 180—6.2 **16 Claims**



A drive mechanism in which a steering wheel is positively connected to a pair of T-arms by an endless chain. The T-arms open and close variable pulley halves of opposed pair of drive and driven pulley assemblies and gear connections are operated by the T-arms to close or open the other halves of the pulley assemblies, all connections being by positive linkage.

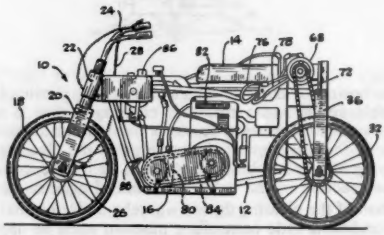
3,572,455
SELF-PROPELLED, ELECTRIC, THREE WHEEL MAINTENANCE CART
Vern Alvin Brueske, Rte 1, Box 90C, Del Mar, Calif.
Filed May 24, 1968, Ser. No. 731,987
Int. Cl. B60l *11/00*
U.S. Cl. 180—26 **2 Claims**

The invention includes a three-wheeled, self-propelled, all purpose vehicle with a large cart-type body, driven by an electric motor on a box-shaped slotted fork just forward of the handlebars and utilizing storage batteries, connected in series, with provision for recharging, with a power train to connect and drive a single, front traction wheel, and with a banana seat for the operator, just behind the motor, over a control box fitted with speed control and reverse lever setting contacts, and brake and on-off pedals at the front end of a large cart bed area with a low center of gravity, and with box-type seats running longitudinally along both sides of the



cart for the storage batteries, and also with a high tailgate in rear, when the UP position, but for use in the DOWN position as a low-angle ramp. The cart operates air pollution free. Maintenance is simple because both the motor and the batteries are easily accessible, Use inside buildings or warehouses as well as outside on pavements, turf or bare ground is favored because of its quite operation, freedom from exhaust fumes and safely from fire or explosion because there is no flammable fuel tank.

3,572,456
BANKABLE TRICYCLE TYPE VEHICLE
Arthur D. Healy, 1939 S. 48th Court, Cicero, Ill.
Filed Jan. 9, 1969, Ser. No. 790,027
Int. Cl. B62h *61/08*
U.S. Cl. 180—27 **7 Claims**

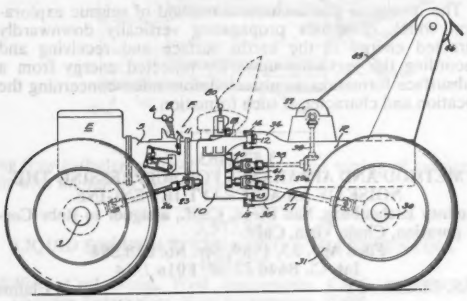


The tricycle type vehicle has a steerable wheel and two outboard wheels which are rotatably mounted on subframes. A parallelogram linkage is connected between the main frame and the subframes so that the entire vehicle is bankable, including the main frame, the subframes and all three wheels. The linkage keeps the outboard wheels parallel to each other and to the main frame. The outboard wheels are movable parallel to the main frame by corresponding amounts but in opposite directions. Resilient means are preferably provided, tending to maintain a rectangular relationship between the elements of the parallelogram linkage. The outboard wheels may be driven in such a manner as to avoid any interference with the action of the parallelogram linkage. Spring mounting means may be provided between each outboard wheel and the corresponding subframe.

3,572,457
ARTICULATED FRAME VEHICLE HAVING POWER SHIFT TRANSMISSION
Rodney G. Hill, Faversham, Kent, England, assignor to Twin Disc, Incorporated, Racine, Wis.
Filed Feb. 25, 1969, Ser. No. 801,968
Int. Cl. B60k *17/34, 23/02;* **B62d** *15/00*
U.S. Cl. 180—51 **2 Claims**

An articulated frame vehicle such as a log skidder, earth-working equipment, or the like in which the frame of the

vehicle is articulated intermediate its length so that a pivot point is provided in the frame to permit the front end of the vehicle to swing laterally relative to the rear end of the vehicle. These vehicles utilize power shift transmissions including friction clutches which need repair or replacement from time to time, and which clutches must be removed from the frame to accomplish these repairs. The pivot point on the front frame section is located on the rear end of the power shift



box, and the clutch assemblies can be removed rearwardly from the box. By so locating the articulate joint on the rear end of the power shift box, the vehicle can be maneuvered so that its front end is swung laterally off the longitudinal centerline of the machine and relative to the rear portion of the machine, thereby exposing the rear end of the power shift box and providing complete accessibility thereto and facilitating the removal of the clutch assemblies without disconnecting the major portions of the vehicle.

3,572,458

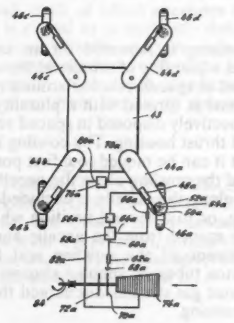
ALL-WHEEL STEERING SYSTEM

Hans Tax, Potsdamer Str. 3, 8 Munich 23, Germany

Filed Dec. 10, 1968, Ser. No. 782,671

Int. Cl. B62d *5/04*

U.S. Cl. 180—79.1 **11 Claims**



A system for individually steering all wheels of a heavy vehicle in which the wheel supports are individually turned by servomotors. The operating signals of respective cam controlled servo transmitters and signals from position indicators are combined to produce error signals which are fed to the servomotors. The cams allow for the different turning angle required for each wheel and may be replaced by other cams shaped for parallel turning of all wheels. If the track width of the vehicle is variable, the individual cams are replaced by cam drums which are shifted axially in response to changes in track width and are shaped to compensate for the required changes in the turning angle with the track width.

3,572,459

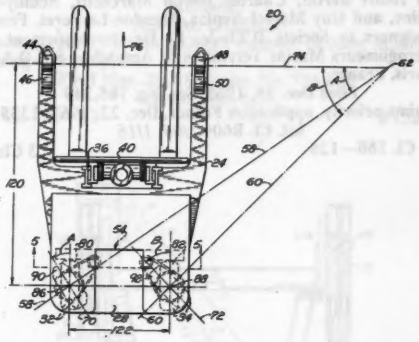
VEHICLE STEERING MECHANISM

Robert A. Nieminski, Philadelphia, Pa., assignor to Eaton Yale & Towne Inc., Cleveland, Ohio

Filed Mar. 19, 1969, Ser. No. 808,525

Int. Cl. B62d *5/06*

U.S. Cl. 180—79.2 **12 Claims**



A vehicle disclosed herein has an improved steering mechanism for effecting geometric steering of steer wheels of the vehicle. The steering mechanism includes a plurality of sets of pinion gears which are driven by rack gears. The rack gears are moved into and out of meshing engagement with the pinion gears to rotate the steer wheels through a steering angle in either one of two directions. When the vehicle is to be turned in its minimum turning radius, one of the steer wheels is turned through a steering angle of more than 90° while the other steer wheel is turned through a steering angle of less than 90°.

3,572,460

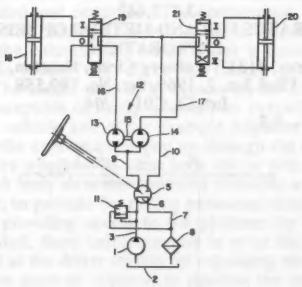
HYDROSTATIC STEERING SYSTEM

Bodo Berlich, Offenbach, Germany, assignor to Danfoss A/S, Nordborg, Denmark

Filed June 24, 1969, Ser. No. 836,077

Int. Cl. B62d *5/06*

U.S. Cl. 180—79.2 **5 Claims**



The invention relates to a hydrostatic-steering system having two or more motors for the power steering of two or more wheels, or two or more pairs of wheels. The motors are arranged in parallel in a hydraulic circuit and a metering type control device operated by a steering wheel is used for controlling the distribution pressurized hydraulic fluid to the motors. A fluid stream quantity divider is utilized to supply equal quantities of pressurized fluid to the motors. Each of the motors has valve means associated therewith having two or three operative positions including a neutral or bypass position. The other operative positions facilitate the operation of a motor such that the turning of the steering wheel in

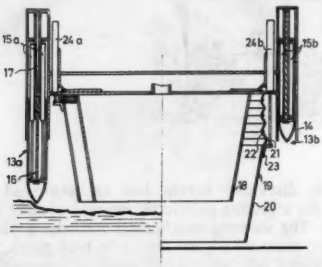
one direction effects the operation of the motor in a selected one of two possible directions. With this arrangement, for example, it is possible to have the front wheels of a vehicle turn in one direction and the rear wheels of the vehicle turn in either selected direction as desired.

3,572,461

SYSTEM FOR CONFINING PRESSURE FLUID CUSHIONS, MORE PARTICULARLY FOR GROUND-EFFECT MACHINES

Jean Henri Bertin; Charles Joseph Marchetti, Neuilly-sur-Seine, and Guy Marcel Neplaz, Meudon-La-Foret, France, assignors to Societe D'Etudes Et De Developpement Des Aeroglisseurs Marins Terrestres Et Amphibies S.E.D.A.M., Paris, France

Filed Dec. 19, 1968, Ser. No. 785,249
Claims priority, application France, Dec. 22, 1967, 133599
Int. Cl. B60v *1/04, 1/16*
U.S. Cl. 180—126 **3 Claims**



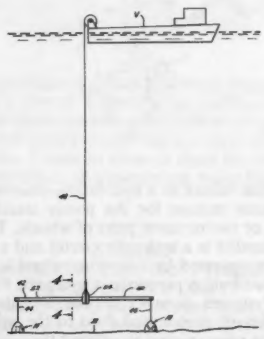
A pressure fluid cushion system for a ground-effect machine movable opposite a surface, the said system comprising two sidewall structures extending substantially parallel to and on each side of the longitudinal medial plane of the machine and having a front end part and a rear end part, the said sidewall structures having sufficient rigidity to resist deformation under the action of variable external forces acting thereon during movement of the machine and laterally bounding a space between the machine and the said surface chambers situated between the said sidewall structures and bounded by flexible skirts which are deformable under the action of said external forces, and means for adjusting the distance of the free end of the said sidewall structures and of the chamber skirts, from the said surface.

3,572,462

APPARATUS FOR AND METHOD OF SEISMIC EXPLORATION

Joseph C. Gray, 4131 Turnberry Circle, Houston, Tex.

Filed Jan. 7, 1969, Ser. No. 789,558
Int. Cl. G01v *1/04*
U.S. Cl. 181—0.5 **4 Claims**



Apparatus for use in seismic exploration comprising energy propogating means for directing energy downwardly vertically into an earth formation and means for receiving and recording such energy reflected vertically upwardly from a sub-surface bed or strata. The apparatus includes an energy source housing of generally dome shape adapted to be placed in a downwardly opening position on the bottom, and within which an energy source may be discharged to generate a vertically downwardly directed force against the sea floor, and a receptor or seismometer housing also of generally dome shape adapted to be similarly positioned on the sea bottom to receive vertically upwardly reflected energy from subsurface strata.

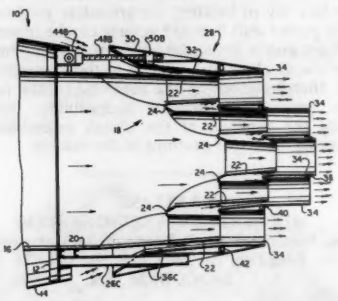
The invention also includes a method of seismic exploration which comprises propagating vertically downwardly directed energy at the earths surface and receiving and recording the vertically upwardly reflected energy from a subsurface formation, to provide information concerning the location and character of such formation.

3,572,463

METHOD AND APPARATUS FOR SUPPRESSING THE NOISE OF AN AIRCRAFT JET ENGINE

Rodney Eschenburg, San Diego, Calif., assignor to Rohr Corporation, Chula Vista, Calif.

Filed Apr. 23, 1969, Ser. No. 818,594
Int. Cl. B64d *33/06;* **F01n** *1/14*
U.S. Cl. 181—51 **4 Claims**



A thrust housing is mounted on an aircraft jet engine nacelle and has a plurality of nozzles at the aft end thereof. A cowling is fitted in spaced relation around the thrust housing and at its aft end is formed with a plurality of ejector tubes which are respectively disposed in spaced relation around the nozzles of said thrust housing. The cowling is mounted on the nacelle so that it can be moved to a first position wherein the forward end of the cowling abuts the nacelle and atmospheric air flowing along the nacelle is excluded from the interior of the cowling, or to a second position wherein the forward end thereof is spaced from the nacelle and atmospheric air enters the interior of the cowling and flows out of the aforesaid ejector tubes in annular streams respectively surrounding exhaust gas streams discharged through the nozzles of the thrust housing.

3,572,464

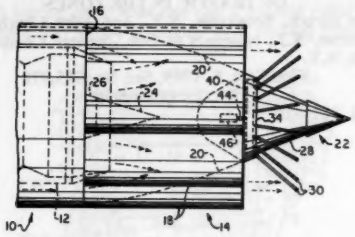
METHOD AND APPARATUS FOR SUPPRESSING THE NOISE OF A FAN-JET ENGINE

Howard R. MacDonald, San Diego, Calif., assignor to Rohr Corporation, Chula Vista, Calif.

Filed Oct. 6, 1969, Ser. No. 863,915
Int. Cl. B64d *33/06;* **F01n** *1/08, 1/14*
U.S. Cl. 181—51 **4 Claims**

Both fan air and exhaust gas of a fan-jet engine are discharged through the lobes of a corrugated thrust nozzle and thus enter the atmosphere in streams spaced apart circumferentially of the aft end of said nozzle. Ambient air flows between the lobes of the nozzle and between said streams of combined fan air and exhaust gas. To provide

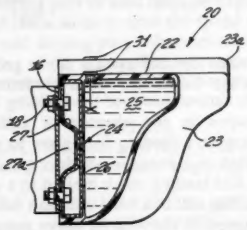
wound suppression, a plurality of elongate vanes are positioned at the interfaces between the aforesaid streams, creating flow turbulence which promotes rapid mixing of ambient air with the fan air and exhaust gas.



3,572,465
LIQUID SHOCK ATTENUATING AND PREVENTING DEVICE

William Carl Olson, West Sacramento, Calif., assignor to Thunder Enterprises, West Sacramento, Calif.

Filed Mar. 18, 1966, Ser. No. 535,443
Int. Cl. B60r *19/08;* **B61f** *19/04;* **F16d** *63/00*
U.S. Cl. 188—1 **1 Claim**

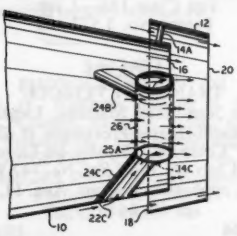


Impact is attenuated by a hollow resilient elongated one-piece body formed by a substantially flat reinforced rear wall, a top wall and front, side and bottom walls defining a cavity which is filled with water. A plurality of apertures are provided in the top wall, each of which apertures is defined by resilient walls and is closed by a resiliently deformable plug in frictional engagement with the aperture walls. In response to a strong impact against the front wall of the body, a series of physical steps occur which result in ejecting the plugs from, followed by water from the cavity upwardly through, the apertures.

3,572,466
APPARATUS FOR AUGMENTING THRUST AND SUPPRESSING NOISE OF JET ENGINE

Felix Hom, La Mesa, and George E. Medawar, San Diego, Calif., assignors to Rohr Corporation, Chula Vista, Calif.

Filed Oct. 24, 1969, Ser. No. 869,194
Int. Cl. B64d *33/06;* **F01n** *1/14*
U.S. Cl. 181—51 **2 Claims**

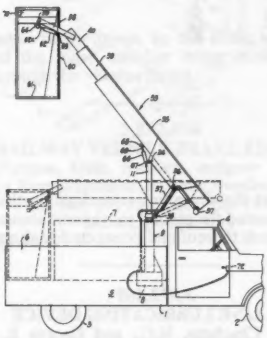


A tubular ejector is coaxially spaced around the aft end of an aircraft housing containing a jet engine so that slipstream air flows in annular stream around thrust gas discharged from the engine. Tubes are connected at one end thereof to edges of openings spaced around periphery of the engine housing and at other end thereof to edges of openings spaced around periphery of a hollow ring coaxially mounted within said housing, so that slipstream air also enters tubes and is discharged into central portion of the thrust gas through a slot in the aft end of ring.

3,572,467
AERIAL LADDER

Thomas R. Hall, Portland, Oreg., assignor to Altec Manufacturing Company, Inc.

Filed Mar. 26, 1968, Ser. No. 716,049
Int. Cl. E06c *5/06*
U.S. Cl. 182—67 **3 Claims**



This invention discloses an aerial ladder or lift apparatus including a fixed vertical column to be mounted on a transport vehicle of the usual type, the upper end of the upright column being provided with a ladder assembly, which ladder assembly is connected to a mechanism provided in the column to raise and lower the outer end thereof, there being provided a personnel platform at the outer end of said ladder to be raised and lowered therewith. The ladder assembly is of the telescopic type and arranged to move from a horizontal position by means of the interconnection of an intermediate portion of the ladder with the column mechanism, a portion of which is provided with hydraulic instrumentalities adapted to be extended and retracted. The combination of this arrangement with linkage intermediate a vertically fixed member in the column from which a link is connected to a point on the ladder will effect the raising and lowering described. The ladder unit is, by reason of the construction set forth, susceptible of being mounted on virtually any kind of transport vehicle and as an example adjacent the driver station with the column extending up through the roof of the body structure whether the same be a van or not, or at least adjacent such body structure, and still rotatable and swingable as stated, to provide for raising personnel directly on the platform or providing access to the platform by the ladder means provided, there being controls in or at the personnel platform and at the driver station for regulating movement of the respective parts as required to position the same where necessary.

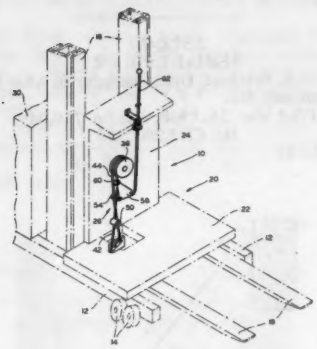
3,572,468
EXTENDIBLE SAFETY MECHANISM

Henry J. Thomas, Battle Creek, Mich., assignor to Clark Equipment Company

Filed Sept. 12, 1969, Ser. No. 857,401
Int. Cl. E04g *1/18;* **B66b** *5/00*
U.S. Cl. 182—112 **8 Claims**

An extendible safety mechanism for use with a lift truck having a body and an elevatable operator's station. The mechanism includes a switch mounted on the body and a control mounted on the operator's station. The control is connected to the switch by a pair of flexible tension members

which are wound on a drum biased to exert a tension on the tension members and means for varying the effective length of one of the tension members. The ends of the tension members remote from the drum are connected to the ends of a bar which is mounted for pivotal movement about an axis intermediate the ends thereof and connected to the switch.

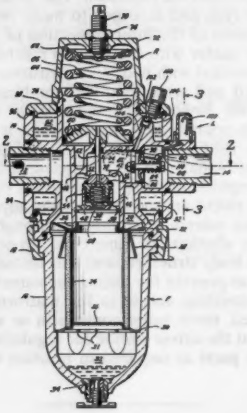


3,572,469

AIR LINE LUBRICATING DEVICE

John F. Miller, Charlotte, N.C., and George R. Ferguson, Clover, S.C., assignors to G. W. Murphy Industries, Inc., Houston, Tex.

Filed Dec. 11, 1968, Ser. No. 782,958
Int. Cl. F16n *7/34*
U.S. Cl. 184—55 **11 Claims**



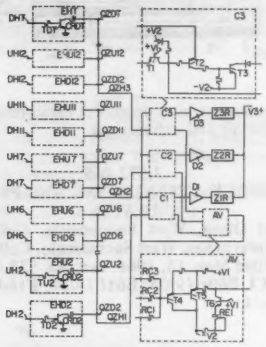
A combined lubricator, filter and pressure regulator device having a body with an inlet and an outlet, a filter in the body in communication with the inlet, a valve, a pressure-responsive means connected to the valve, the valve being mounted within the body to control flow from the filter to the outlet and a lubricating fluid injector in the body between the filter and the outlet.

3,572,470

ZONED ELEVATOR CONTROL SYSTEM INCLUDING AN ARRANGEMENT FOR CONTROLLING THE OPERATION OF CARS IN RESPONSE TO THE LEVEL OF TRAFFIC IN THE ZONES

Melvyn Hirsch, Bronxville, N.Y., and John Charles Doane, Somerset, N.J., assignors to Otis Elevator Company, New York, N.Y.

Filed Sept. 8, 1969, Ser. No. 855,978
Int. Cl. B66b *1/20*
U.S. Cl. 187—29 **7 Claims**



A zoned elevator control system for a group of cars in which the cars are distributed on a predetermined apportioned basis into various zones of the building for assignment thereto, whereupon in the absence of calls each car is brought to a stop at a landing in a zone to which it is assigned. Thereafter in a zone to which a car is assigned the response to the first landing call is limited to a car assigned to that zone. A landing call in a zone to which no car is assigned starts a car assigned in the nearest lower zone. The level of traffic in each zone is measured individually and is a function of the number of landing calls in registration in the respective zone. An average of a number of landing calls in all zones is derived and a comparison is made between the number of landing calls in each individual zone and the average number of landing calls. Whenever the number in any zone exceeds the average by a predetermined amount it signifies that the zone is a heavy traffic zone. As a result the limitation on the response to landing calls to a car assigned to that zone is removed. This enables a car in the nearest lower zone to respond to landing calls in the heavy traffic zone notwithstanding another car is assigned to that zone. In addition while the heavy traffic demand continues any car in a zone which is in excess of the apportioned number of cars for that zone and therefore is not assigned to that zone is caused to travel toward the heavy traffic zone. All cars entering the heavy traffic zone while the heavy traffic demand continues are assigned to that zone and are thereby prevented from traveling to an unoccupied zone as they otherwise would.

ERRATUM

For Class 188—1 see:
Patent No. 3,572,465

3,572,471

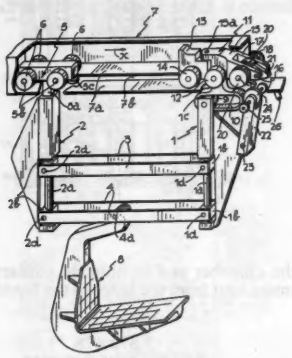
TRANSPORT VEHICLE

Ghislain Antoine Jean-Marie Martelee, Lieges, Belgium, assignor to Cockerill-Ougree-Providence et Esperance-Longdoz en abrege "Cockerill,", Seraing-lez-Liege, Belgium

Filed July 26, 1968, Ser. No. 747,936
Claims priority, application Belgium, Aug. 11, 1967, 41,445
Int. Cl. B61h *13/20*
U.S. Cl. 188—144 **13 Claims**

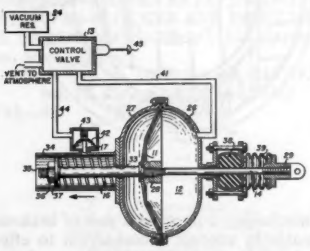
In a transport vehicle having a rigid frame and rollers rolling on a track there is provided, an automatic speed con-

trolling means comprising a gear wheel whose rotation is controlled by an oscillating element having two jaws spaced apart from one another and cooperating respectively and alternately with the teeth of said gear wheel which is mounted on a shaft having on at least one end a friction roller rolling on said track and which is carried by a rocking component



adapted to rock in respect of said rigid frame on any downwardly sloping part of said track to engage said friction roller with said track so as to slow the speed of travel of said vehicle along said sloping part. Alternatively, friction brakes may be provided which are applied by rocking movement of a vehicle component on a downwardly sloping track portion.

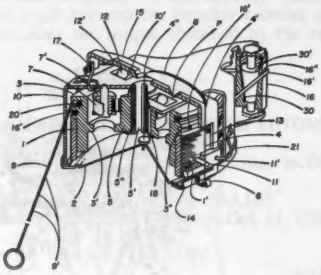
3,572,472
EMERGENCY BRAKE SYSTEM FOR A VEHICLE
Edward R. Black, 1261 Normandy Way, Apt. 2, Santa Clara, Calif.
Filed Apr. 21, 1969, Ser. No. 817,772
Int. Cl. F16d *69/00*
U.S. Cl. 188—290 **1 Claim**



A parking brake for a motor vehicle is actuated by reduced pressure or vacuum from the engine intake manifold which will compress a spring to release the brakes. When the vacuum is shut off the spring will expand and will apply the brakes to the vehicle. When the spring is compressed and the brakes are released, a pawl will engage and secure the spring in compression to prevent inadvertent application of the brakes if the manifold vacuum is reduced.

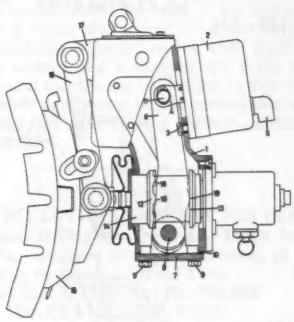
3,572,473
PHONOGRAPH SYSTEM
Royal V. Jones, Jr., Waltham; Clayton H. Allen, Wellesley, and Colin G. Gordon, Bedford, Mass., assignors to Bolt Beranek and Newman Inc., Cambridge, Mass.
Original application Feb. 13, 1967, Ser. No. 615,537, now Patent No. 3,480,283. Divided and this application Mar. 5, 1969, Ser. No. 828,036
Int. Cl. F16d *57/00*
U.S. Cl. 188—183 **2 Claims**

Phonograph system with tensioned wire coupling between a needle engaging a drum-type record and a loudspeaker, and including a speed controller having a pair of coaxial conical members with a viscous liquid therebetween, the



outer member being driven by the drum which carries the record and the inner member being driven by the outer member through the viscous liquid.

3,572,474
RAILWAY VEHICLE BRAKE RIGGING
Gert A. Persson, Oxie, Sweden, assignor to Svenska Aktiebolaget Bromsregulator, Malmo, Sweden
Filed Jan. 27, 1969, Ser. No. 794,268
Int. Cl. F16d *65/44*
U.S. Cl. 188—197 **6 Claims**

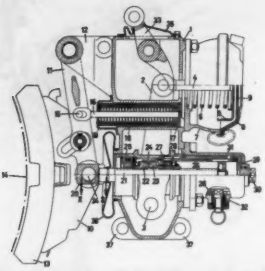


A railway vehicle brake rigging is disclosed with a power source such as a pneumatic cylinder actuating a pivoted lever against a shoulder on a pushrod for moving a brake shoe into the wheel. Provisions are made to vary the pivot axis position while maintaining axial contact between the pivoted lever and the pushrod by means of introducing spacing elements between a housing assembly containing the pivoted lever and the mounting for the pushrod. The movement of the pivot axis position permits the application of different forces to the brake shoe.

3,572,475
RAILWAY VEHICLE WHEEL BRAKE UNIT
Gert Artur Persson, Oxie, Sweden, Nil Barge Lennart Sander Malmo Sweden, assignor to Svenska Aktiebolaget Bromsregulator, Malmo, Sweden
Filed Nov. 25, 1968, Ser. No. 778,394
Int. Cl. F16d *65/56*
U.S. Cl. 188—202 **2 Claims**

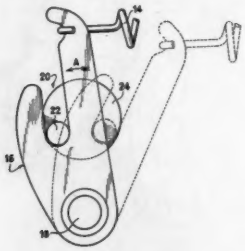
A railway wheel brake unit, having a pivoted brake shoe lever moved by a piston into braking braking position by means of the engagement with a slack-adjusting mechanism

and forced by a spring away from braking position, includes a pivoted coupling member on the brake shoe lever with a V-shaped groove registering a V-shaped end pushing member



on the slack adjusting mechanism to thereby permit sliding engagement in the plane of movement of the brake shoe lever without rotation.

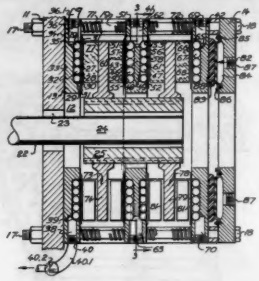
3,572,476
SHOE RETRACTING SYSTEM FOR INTERNAL SHOE DRUM BRAKES, AND BRAKES INCLUDING SAME
Bernard Laverdant, Vincennes, France, assignor to Societe Anonyme D.B.A., Paris, France
Filed Jan. 23, 1969, Ser. No. 793,313
Claims priority, application France, Jan. 26, 1968, 137,591
Int. Cl. F16d *65/58*
U.S. Cl. 188—216 **4 Claims**



A drum brake is disclosed which includes a lever pivotally attached to one of the shoes. The lever has a hooked end which is attached to one end of a return spring which is stretched between the shoes. A cam member is rotatably mounted on the one shoe and includes an eccentric mounted thereon which engages a slot in the lever. Rotation of the cam member moves the lever from a first position in which the return spring is relaxed to a second position in which the spring is stressed to exert a force on the shoes. The cam member is accessible from the exterior of the brake so that an appropriate tool may be used to rotate the cam member.

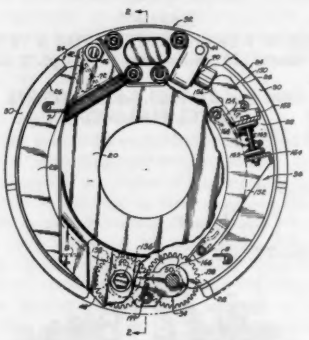
3,572,477
LIQUID COOLED BRAKE
James M. Ewart, Nanimo, British Columbia, Canada, assignor to S. Madill Ltd.,, Nanaimo, British Columbia, Canada
Filed Nov. 25, 1968, Ser. No. 778,733
Int. Cl. F16d *65/84*
U.S. Cl. 188—264 **1 Claim**

A Liquid Cooled Brake wherein a steel wear plate adapted to be engaged by a frictional element forms one wall of the chamber through which a liquid coolant is passed. Copper



fins in the chamber and in intimate contact with the wear plate transfer heat from the latter to the liquid coolant.

3,572,478
BRAKE MECHANISM
William S. Nagel, Franklin, and Mack H. Lawrence, Farmington, Mich., assignors to Eaton Yale & Towne, Inc., Cleveland, Ohio
Continuation of application Ser. No. 679,468, Oct. 31, 1967, now abandoned. This application Oct. 31, 1969, Ser. No. 871,789
Int. Cl. F16d *51/52*
U.S. Cl. 188—330 **37 Claims**

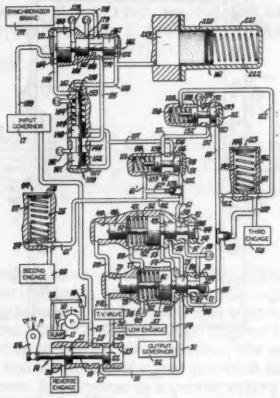


A brake mechanism comprises a pair of brakeshoes which are displaceable to contact a brakedrum to effect braking thereof. Each of the brakeshoes has first and second ends. Abutment means contacts the respective first ends of the brakeshoes, and actuator means in the form of a wedge actuator effects outward displacement of the second ends of the brakeshoes an equal amount during braking. The brakeshoes are mounted on a sheet metal spider member which is located generally centrally with respect to the brakeshoes. The abutment means which contacts the first ends of the brakeshoes consists of a pair of cam members which are rotated to effect adjustment of the brakeshoes in response to brake lining wear.

3,572,479
STEP-RATIO TRANSMISSIONS WITH FLUID OPERATED SYNCHRONIZING BRAKE
Oliver K. Kelley, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed July 24, 1969, Ser. No. 844,324
Int. Cl. F16h *57/10*
U.S. Cl. 192—4 **9 Claims**

A control system for an even step-ratio power transmission driven by a gas turbine power source. A synchronizing brake

is adapted to decrease the speed of the turbine shaft and transmission input shaft to establish a predetermined speed ratio between the input and output shafts of the transmission during upshifting of the transmission and to permit the turbine shaft speed to increase to establish a predetermined speed ratio between the input and output shafts during downshifting of the transmission. The synchronizing brake is controlled by a synchronizing valve which is controlled by an



accumulator governor pressure and by an input governor pressure. Fluid pressure from the governor and the accumulator to the synchronizing valve is controlled by a governor control valve that is movable to an upshift position to direct governor pressure to one side of the synchronizing valve and accumulator pressure to the other side and to a downshift position to reverse the governor and accumulator pressure connections on the synchronizing valve.

3,572,480

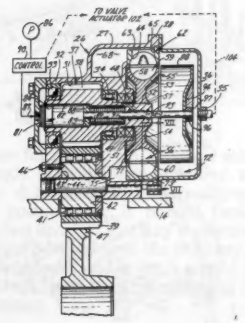
TRANSMISSION-DRIVEN RETARDER WITH FLUID-OPERATED BLOCKER AND INLET VALVE

William S. Nagel, Franklin, Mich. (3135 Spring Court, Birminghan, Mich., 48010)

Filed Apr. 14, 1969, Ser. No. 815,733

Int. Cl. F16h *57/10*; **F16d** *57/02*

U.S. Cl. 192—4B **11 Claims**



A device for retarding the speed of a motor vehicle having an engine cooling system, ground engaging wheels and a transmission including a housing and gears normally shiftable into high ratios at low vehicle speeds and low ratios at high vehicle speeds and having a power takeoff connection to said transmission at a point having at least a pair of ratio gears between the power takeoff and the output shaft of said transmission. An impeller housing is connected to said cooling system for receiving energy absorbing medium therefrom, and has a stator fixed thereto and an impeller rotatably concentrically mounted therewithin. Said rotor is preferably secured to the power takeoff and is driven thereby. A control sleeve is mounted internally of the impeller housing for movement into a gap between the impeller member and the stator for controlling the torque absorbed by the retarder unit.

3,572,481

LATCH-RELEASED COIL CLUTCH WITH AUTOMATIC FRICTION BRAKE

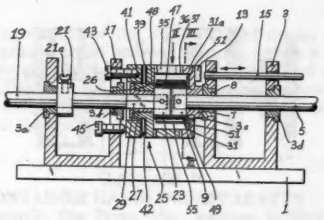
Rolf Moritz, Wilhelmshaven, Germany, assignor to Olympia Werke A G, Wilhelmshaven, Germany

Filed Oct. 2, 1969, Ser. No. 863,165

Claims priority, application Germany, Oct. 11, 1968, P 18 02 486.7

Int. Cl. F16d *67/02*

U.S. Cl. 192—12 **10 Claims**



An output shaft is driven from a drive shaft by clutch means including a coil spring enveloping clutch drums on the drive shaft and output shaft. The ends of the coil spring are connected with a brake disc mounted on the output shaft, and with a control disc mounted on the drive shaft for rotation. When the control disc is stopped, the brake disc continues to rotate and spreads the coil spring so that the clutch is disengaged, while cam means on the control disc move the still turning brake disc to a braking position abutting a stationary brake member.

3,572,482

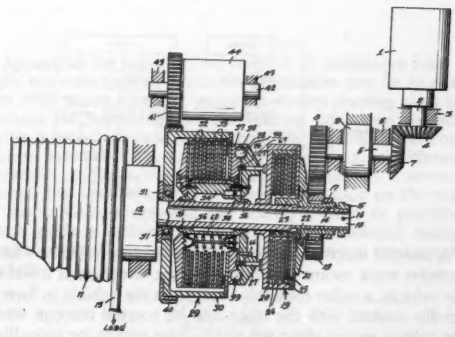
AUTOMATIC CLUTCH AND BRAKE FOR HOISTS

Roland A. Kalpas, Willingboro, N.J., and Derek W. Stowe, Springfield, Pa., assignors to the United States of America as represented by the Secretary of the Army

Filed Jan. 3, 1969, Ser. No. 788,860

Int. Cl. F16d *67/02*, *67/00*

U.S. Cl. 192—15 **2 Claims**



A mechanical load brake system having a motor in driving connection with a traveling nut threadable on the drive shaft of a hoist drum. When rotated in one direction the nut will engage an input clutch which, in turn, engages a disc brake

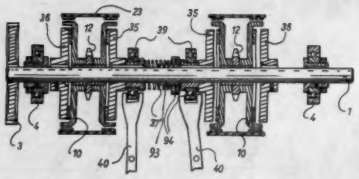
to lock a brake housing for rotation with the drive shaft. The brake housing is prevented from rotation in both directions by a backstop brake to permit free rotation of the drive shaft during hoisting without having to overcome brake friction torque in addition to the torque required to hoist the load, and on lowering the load to hold fixed the brake housing to permit generation of a reaction torque when brake application is required. On lowering the speed of the drive shaft is controlled by the nut which acts as a governor.

3,572,483

STEERING CLUTCH AND BRAKE FOR DOUBLE-TRACKED VEHICLE

Benoit Giguere, Lambton Village, Frontenac, Quebec, and Augustin Veilleux, 86 Normand Boulevard, Chateauguay Centre, Quebec, Canada

Filed Mar. 24, 1969, Ser. No. 809,733
Int. Cl. F16d *67/02, 21/06;* **B62d** *11/08*
U.S. Cl. 192—13 **3 Claims**



A steering clutch and brake for double-tracked vehicles in which the vehicle engine drives the respective tracks through an intermediate driving shaft, carrying two clutching systems, each associated with one track of the vehicle and each including a driven clutch disc having a peripheral flange providing an external braking surface cooperable with a brakeshoe forming a braking system for stopping the vehicle or for making a sharper turn.

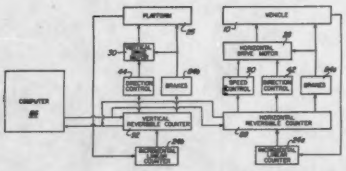
The drive also includes means for easily adjusting the clutching engagement of the clutching discs to prevent slipping.

3,572,484

CONTROL MECHANISM COMPRISING MOTOR AND BRAKES RESPONSIVE TO COUNTER MEANS

Kenneth A. Richins, Salt Lake City, Utah, assignor to Eaton Yale & Towne Inc., Cleveland, Ohio

Filed Nov. 14, 1968, Ser. No. 775,889
Int. Cl. F16d *71/04;* **B65g** *47/22*
U.S. Cl. 192—142 **8 Claims**



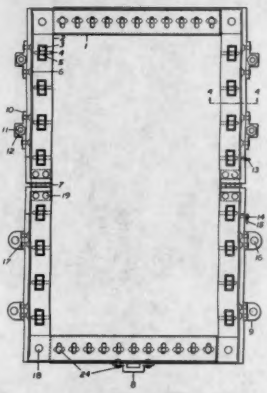
A control mechanism for material carrying vehicles which includes track means for controlling the direction of travel of the vehicle, a roller rotatably secured to the vehicle to form a no-slip contact with the track and be rotated thereon when the vehicle moves along the track, drive means for propelling the vehicle, a counter driven by the roller for counting the roller revolutions, vehicle brakes for braking the movement of the vehicle, and activation circuit means electrically connected to the counter and to the brakes for setting the brakes when the roller has rotated a predetermined number of revolutions.

3,572,485

CONVEYOR-TYPE FOLDUP TOOL CHEST BASE

Reese Wesley Hardin, 4101 S. Shaver #3504, Pasadena, Tex.

Filed May 15, 1969, Ser. No. 827,473
Int. Cl. B65g *13/00*
U.S. Cl. 193—35 **4 Claims**



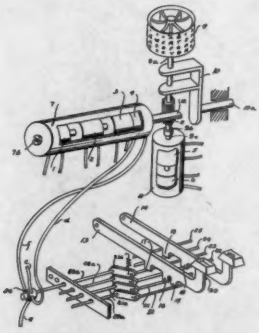
A portable conveyor having rollers in its upper surface for sliding a toolbox or the like into a space such as one under a cabinet. The conveyor is hinged intermediate its ends so that the portion of the conveyor projecting from the space may be folded vertically and locked in that position.

3,572,486

PNEUMATIC SETTING ARRANGEMENT FOR A TYPE HEAD

Martin Hebel; Otto Krauss, Nuernberg, and Hermann Waldenburger, Wolkersdorf, Germany, assignors to Grundig E.M.V. Elektro-Mechanische Versuchsanstalt, Fuerth, Bayern, Germany

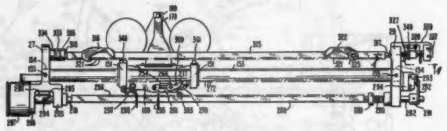
Filed Sept. 6, 1968, Ser. No. 757,919
Claims priority, application Germany, Nov. 28, 1967, G38438
Int. Cl. B41j *23/20*
U.S. Cl. 197—15 **10 Claims**



A series of pairs of interconnected cylinders and pistons is provided for setting a type head between different printing positions. The cylinder and piston of each pair are movable between a contracted position and an expanded position, and the cylinders and pistons of different pairs are spaced in the expanded position different distances selected in accordance with a code. Pneumatic operating means including valves controlled by keys, move the cylinders and pistons of

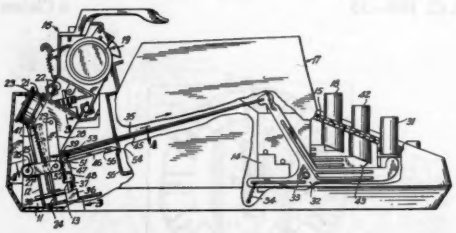
selected pairs to the expanded position so that the piston at one end of the series is displaced relative to the cylinder at the other end of the series a distance which is the total of the distances of expansion of the selected pairs, and sets the type head accordingly to different printing positions.

3,572,487
MARGIN CONTROL STRUCTURE
Donald L. Rolph, Fairport, and Ronald Tristram, Rochester, N.Y., assignors to The Singer Company
Original application Oct. 6, 1967, Ser. No. 673,440. Divided and this application May 1, 1969, Ser. No. 842,749
Int. Cl. B41j *21/02*
U.S. Cl. 197—63 **1 Claim**



A margin control structure for use with a character-by-character printer having a margin stop rack supported for pivotal and longitudinal motion away from a home position. In response to the carrier entering a zone defined by the position of the right-hand margin stop member, the margin stop rack is pivoted and an electrical signal provided indicative of entry into the zone. In response to a carrier return signal, the carrier is moved to the left until a projection on the carrier engages the left-hand margin stop member, thereby moving the margin stop rack longitudinally. In response to said last mentioned longitudinal motion, an electrical signal is generated to terminate the carrier return motion.

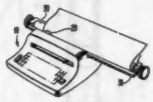
3,572,488
SHIFT AND SHIFT LOCK MECHANISM FOR TYPEWRITER
Shigeaki Kuramochi, Tokyo, Japan, assignor to Louis Marx & Co., Inc., New York, N.Y.
Filed Jan. 15, 1969, Ser. No. 791,278
Int. Cl. B41j *11/14, 29/64*
U.S. Cl. 197—73 **6 Claims**



A shift mechanism for a typewriter having a shift key and a shift lock key, both of which are effective to shift the typewriter carriage. A latching arm is normally spring-biased to a nonlatching position and is rocked forwardly to a latching position when the shift lock key is operated to retain the carriage in shifted position until the shift key is operated to release the latching force on the latch arm to permit it to be biased to a nonlatching position for release of the carriage from the shifted position.

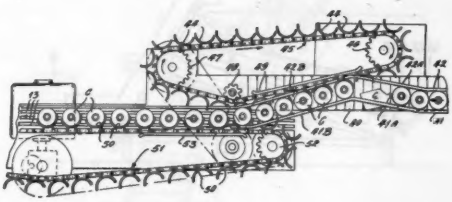
3,572,489
TYPEWRITER WITH EXTENDED WRITING LINE
John O. Schaefer, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Nov. 8, 1968, Ser. No. 774,281
Int. Cl. B41j *19/00*
U.S. Cl. 197—82 **4 Claims**

The writing line of a moving print element typewriter is extended beyond the typewriter side frame by employing a long paper carriage and effecting conjoint opposite direction movement of the paper carriage of a print element carrier. Absolute movement of the paper carriage and the print element carrier is thus less in each case than the length of the writing line. A mechanical interconnection is employed to allow control over both movements to be obtained by con-



trolling the movement of the print element carrier. Movement of the print position between adjacent letters is accomplished by moving the print element two-thirds of a letter space to the right and simultaneously moving the paper one-third of a letter space to the left to minimize the effective inertial loads on the system.

3,572,490
CONTAINER HANDLING APPARATUS
Momir Babunovic, Des Peres, Mo., assignor to Barry-Wehmiller Company, St. Louis, Mo.
Filed Apr. 1, 1969, Ser. No. 811,880
Int. Cl. B65g *47/26*
U.S. Cl. 198—22 **9 Claims**

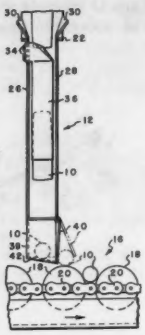


Apparatus for handling the transfer of containers from a table top conveyor on which the containers may be in contact with each other to conveyor means having cups or pockets for separating and preventing container contact. There is included apparatus for handling the transfer of containers between table top conveyors moving in different directions through the application of pocketed conveyor means. The apparatus utilizes a container guide on the side of the containers opposite the conveyor cups or pockets, which guide is inclined in the direction of container movement to gradually cause the containers to seat in the cups or pockets.

3,572,491
COIN CHUTE
Richard D. Wylie, 114 Anthony St., Gaffney, S.C.
Filed June 3, 1968, Ser. No. 734,054
Int. Cl. B65g *47/04*
U.S. Cl. 198—26 **1 Claim**

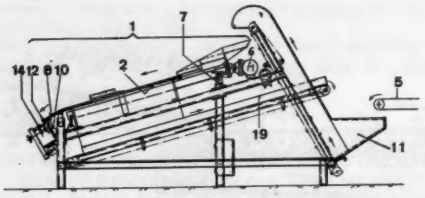
Apparatus to receive wrapped rolls of coins and automatically transfer such rolls to another coin handling apparatus

which is located at an angle to the initial coin roll receiving apparatus. Basically, the apparatus includes a gate member



which prevents the rolls of coins from being transferred onto the other coin handling apparatus in a skew position.

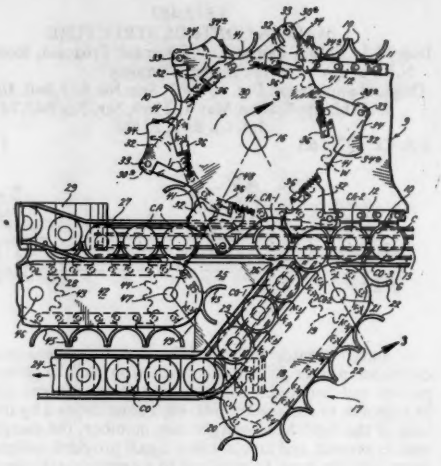
3,572,492
APPARATUS FOR ALIGNING PARQUET STRIPS IN THE SAME DIRECTION
Werner Dreszig, Saint Margrethen, Switzerland, assignor to Bauwerk AG, St. Margrethen, Switzerland
Filed Nov. 4, 1968, Ser. No. 782,507
Claims priority, application Switzerland, Nov. 7, 1967, 15523/67
Int. Cl. B65g *47/24, 47/26*
U.S. Cl. 198—30 **8 Claims**



There is disclosed an apparatus for aligning parquet strips in the same direction and which is of the type comprising chute means equipped with a plurality of adjacent or juxtapositioned channels for receiving the parquet strips. A jolting mechanism cooperates with the chute means for aligning the parquet strips which have been randomly received upon the chute means and further serves to convey such parquet strips along the chute means. A transfer table is disposed at the discharge end of the chute means and removes the aligned parquet strips. Transverse extending stop means are arranged at the region of the discharge end of the chute means in front of the transfer table. The aligned parquet strips impact against such transverse extending stop means. Furthermore, means serve to periodically render inoperable the transverse extending stop means so that the parquet strips impacting thereagainst slide past such transverse extending stop means and onto the transfer table.

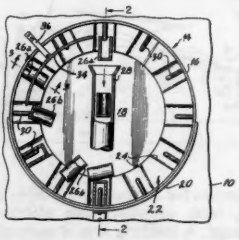
3,572,493
CONTAINER FLOW DIVIDER APPARATUS
Momir Babunovic, Des Peres, Mo., assignor to Barry-Wehmiller Company, St. Louis, Mo.
Filed Feb. 7, 1969, Ser. No. 797,406
Int. Cl. B65g *47/30*
U.S. Cl. 198—31 **9 Claims**

Container handling apparatus for dividing a single stream of containers moving at high speed into two slower moving streams by means which alternately diverts containers to one of the slower conveyors and passes containers to another of the slower conveyors so that there is no loss in the speed of handling the containers and the single high-speed stream is



effectively reduced to streams moving at more moderate speeds to match the operating speeds of processing machinery. The apparatus includes means to effect the container diverting so that the chances of blocking the single high-speed stream is substantially avoided.

3,572,494
HOPPER TYPE APPARATUS FOR ORIENTING AND FEEDING JARS, OR THE LIKE
Samuel S. Aidlin, 214 Beaumont St., and Stephen H. Aidlin, 3855 Shore Parkway, New York, N.Y.
Filed Oct. 17, 1968, Ser. No. 768,472
Int. Cl. B65g *17/24*
U.S. Cl. 198—33 **6 Claims**

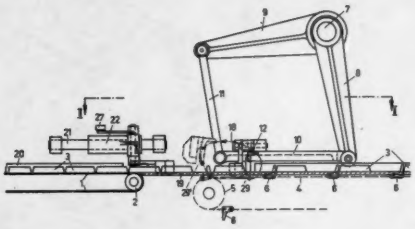


A hopper type apparatus for automatically feeding jars, or the like, oriented with their bottoms foremost; including a rotary, inclined feed ring having radial recesses formed therein for picking up jars at the bottom of the hopper for discharge at the top thereof and a chute for receiving the discharged jars; each said recess having a pin extend part way thereinto from its peripheral end in spaced relation to the recess wall; said pin permitting a jar entering the recess opening foremost to enter fully into the recess and preventing a jar entering the recess bottom foremost from entering fully therein; and a friction bar disposed above the feed ring in position to frictionally engage the portion of the jar fitted over the pin to hold it in place within the recess until it is carried up to the chute inlet.

3,572,495
METHOD AND APPARATUS FOR SEPARATING CONTIGUOUS OBJECTS AND FOR MOVING THEM TO A SECOND ADVANCING MEANS

Pierre Luginbuhl, Neuhausen am Rheinfall, Switzerland, assignor to Schweizerische Industrie- Gesellschaft, Neuhausen am Rheinfall, Switzerland

Filed Dec. 26, 1968, Ser. No. 786,893
Claims priority, application Switzerland, Feb. 13, 1968, 2106/68
Int. Cl. B65g *47/26*
U.S. Cl. 198—34 **7 Claims**

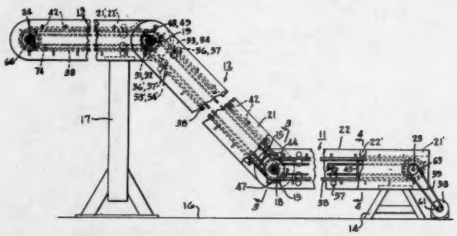


A buffer synchronizes the movement of the foremost chocolate bar of a row of contiguous bars, from a first conveyer, with the movement of a second conveyer. Two pairs of clamping jaws, working alternately, then accelerate the foremost bar to the second conveyer, while another pair of jaws, timed with the operation of the first conveyer and with the two other pairs of jaws, holds the bar behind the foremost one and advances it in synchronism with the first conveyer.

3,572,496
ADJUSTABLE ANGULATED CONVEYOR SYSTEM IN WHICH HOLDDOWN ROLLERS ARE EMPLOYED TO SECURE A RIDGED BELT TO CHANNELED PULLEYS

Ernest M. Cutts, Sr., and Ernest M. Cutts, Jr., R.D. #3, Vincentown, N.J.

Filed Jan. 21, 1969, Ser. No. 792,354
Int. Cl. B65g *41/00*
U.S. Cl. 198—109 **10 Claims**



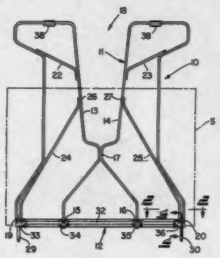
An angulated conveyor system is described in which a ridged conveyor belt is securely supported on channeled pulleys by holddown rollers. The frame of the conveyor is formed in a plurality of sections. The sections are pivotally connected to allow angular adjustment. A separate endless drive chain is provided in each section to permit angular adjustment without adjusting the tension on the chains.

3,572,497
WICKET AND METHOD OF CONSTRUCTION

John A. Karpac, North Royalton, Ohio, and Richard S. Thrasher, East Aurora, N.Y., assignors to FECO, A Division of Bangor Punta Operations, Inc., Bangor, Maine

Filed Dec. 18, 1968, Ser. No. 784,793
Int. Cl. B65g *17/16*
U.S. Cl. 198—134 **6 Claims**

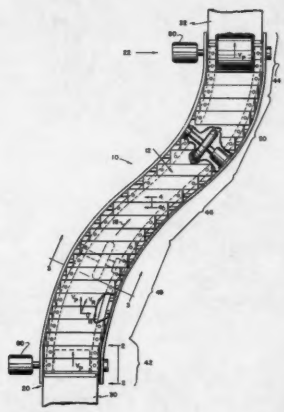
A wicket construction with the chain pin and wicket tubes attached to the rest bar and each other by two weld or brazed joints, one on the backside of the wicket above the rest bar and the other also on the backside through a slotted hole in the center of the rest bar.



3,572,498
VARIABLE SPEED CONVEYOR

Andrew G. Hammitt, Palos Verdes Peninsula, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Sept. 23, 1968, Ser. No. 761,730
Int. Cl. B65g *15/02*
U.S. Cl. 198—182 **9 Claims**



A variable speed conveyor having an endless conveyor member composed of longitudinally spaced load-bearing sections which are relatively movable with at least a component of relative motion parallel to the conveyor path. The conveyor member is driven endwise in a manner such that the velocity of each load-bearing section parallel to the conveyor path varies along the path between the conveyor infeed and outfeed stations to maximize the average conveyor velocity along the path and/or to provide the conveyor with different infeed and outfeed velocities. The conveyor is useful both as an article conveyance and a pedestrian conveyance.

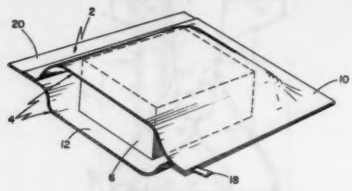
3,572,499
CONDUCTIVE PACKAGING MATERIAL AND CONTAINER FOR EXPLOSIVES

Ralph L. Mondano, Lexington, Mass., assignor to Custom Materials, Inc., Chelmsford, Mass.

Filed Jan. 19, 1967, Ser. No. 610,260
Int. Cl. B32b *27/32, 15/18, 7/00*
U.S. Cl. 206—1 **8 Claims**

A laminated-sheet-packaging material having good moisture-vapor-barrier properties and providing reduced risk

of deleterious effects from buildup of static electricity is formed from an aluminum film having a layer of protective material on one face and a layer of heat-sealable, electrically



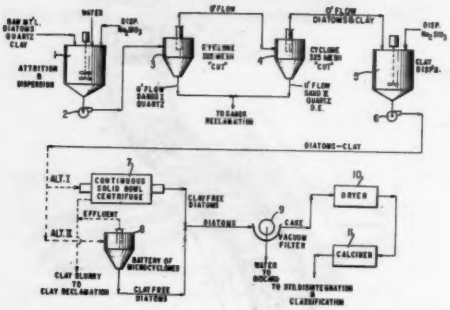
conductive plastic material on the other face, the electrically conductive plastic material forming the inner surface of the package.

3,572,500

BENEFICIATION OF DIATOMACEOUS EARTH

Anastasios P. Kouloheris, Atlanta, Ga., assignor to Cities Service Company, New York, N.Y.

Filed June 18, 1968, Ser. No. 738,022
Int. Cl. B03b *1/00, 7/00*
U.S. Cl. 209—5 **14 Claims**



Diatomaceous earth can be purified of sand and clay and reduced to a smaller particle size by wet attritioning raw diatomaceous earth to reduce the diatomite particle size, hydraulically classifying the wet attritioned material to remove sand and quartz, dispersing clay and centrifugally classifying to remove said clay. Wet attritioning can be done in the presence of a clay dispersant and centrifugal classification can be done before or after the quartz and sand are removed.

3,572,501

METHOD OF SEPARATING TONER PARTICLES FROM CARRIER PARTICLES IN DEVELOPER MIXTURES USED IN ELECTROSTATIC PRINTING

James Norton Brennan, Chicago, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed Nov. 7, 1968, Ser. No. 774,182
Int. Cl. B03b *1/04*
U.S. Cl. 209—9 **4 Claims**

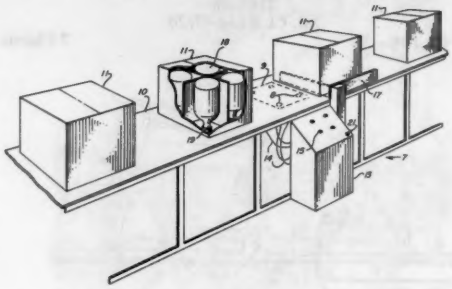
In an electrostatic-printing process employing a developer mixture comprised of electrically conductive carrier particles, and electrostatically attractable nonconductive toner particles, the carrier particles may be separated from the toner particles by immersing the developer mixture in a dilute electrolyte solution. The separation of the carrier particles from the toner particles permits the carrier particles to be reused with a variety of different colored toner particles.

3,572,502

ELECTRONIC CLOSURE DETECTION SYSTEM

Richard M. Quinn, Muncie, Ind., and Donny W. Candioto, Broken Arrow, Okla., assignors to Ball Corporation

Filed Dec. 23, 1968, Ser. No. 786,001
Int. Cl. B07c *5/344*
U.S. Cl. 209—73 **15 Claims**



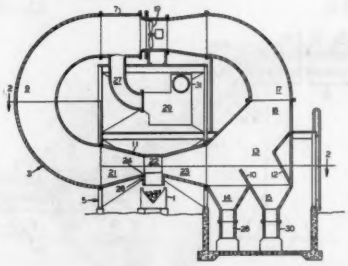
An electronic closure detection system for sensing presence or absence of closures and, in particular, closures normally hidden from view. The apparatus includes one or more inductive sensors which form part of the frequency-determining network of an oscillator, the frequency of the oscillator being changed by the sensed presence of a closure. Determining circuitry responsive to the output of the oscillator controls energization of means for indicating presence or absence of the closures, and provides a signal for proper gate operation where applicable.

3,572,503

TRASH SEGREGATION APPARATUS

William J. Hezel, St. Louis, Mo., assignor to Waste Reclamation Corporation, St. Louis, Mo.

Filed Nov. 4, 1968, Ser. No. 773,248
Int. Cl. B07b *4/00*
U.S. Cl. 209—120 **10 Claims**



Apparatus for segregating trash in accordance with its specific gravity, comprising a vibratory conveyor which causes large or heavy pieces of material such as metal or wood to settle to the bottom and lighter material such as paper and cardboard to remain at the top, and a closed circuit conduit having a venturi above the conveyor with an opening in its throat directly over the conveyor, a blower anterior to the venturi in the conduit for producing a flow of air through the venturi whereby to create a pressure reduction at the venturi throat sufficient to lift the lighter materials, i.e., paper and cardboard, off the conveyor and into the venturi and to propel the material received therein through the venturi, a plurality of upwardly open hoppers communicating with the conduit ductwork posterior to the venturi whereby the heavier materials will be caused to fall, by their specific gravity into the first hopper and lighter materials will be

caused to fall by their relative specific gravities into the succeeding hopper or hoppers. For discharging excess air down into the system through the venturi throat opening, from the system, a lateral discharge conduit including an air filter is provided posterior to the blower.

3,572,504

METHOD FOR THE FLOTATION OF OXIDIC ORES WITH CALCAREOUS AND DOLOMITIC GANGUE

Jacques A. DeCuyper, Sterrebeek, Belgium, assignor to Societe De Produits Chimiques D'Auby, Neuilly-sur-Seine (Hauts de Seine), France

Continuation of application Ser. No. 637,621, May 11, 1967, now abandoned. This application Oct. 21, 1969, Ser. No. 868,241

Int. Cl. B03d *1/02*

U.S. Cl. 209—166 **7 Claims**

A method for the flotation of minerals and ores with a calcareous and dolomitic gangue, such as oxidized ores, especially of copper, in which there are incorporated in the flotation pulps, when so required, together with modifying reagents acting on the minerals to be collected, modifying products acting on the gangues, especially on calcareous and dolomitic gangues, the said gangue-modifying products being preferably agents selected from the group comprising the polymers of acrylic acid, their derivatives and their equivalents which are soluble in water.

3,572,505

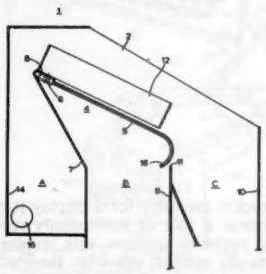
SCREENING DEVICE

Johannes Jongbloed, Hoensbroek, Netherlands, assignor to Stamicarbon N. V., Maesenstraat, Heerlen, Netherlands

Continuation of application Ser. No. 714,985, Mar. 21, 1968, now abandoned. This application Dec. 11, 1969, Ser. No. 884,372

Int. Cl. B07b *1/04*

U.S. Cl. 209—240 **5 Claims**



To overcome the tendency for undersize particles, in a wet, loose, solid material being screened on a stationary screening device comprising inclined longitudinal bars, to follow the surfaces of the bars into an oversize fraction collection area: the lower end regions of the bars are directed downwardly and terminated at such points that undersize particles dropping from the lower ends will drop into an undersize fraction collection area.

3,572,506

UNDERWATER STORAGE TANK

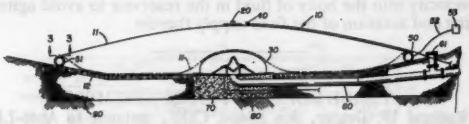
William J. Bandy, Jr.; William K. E. Morris, and Grant M. Stainbrook, Akron, Ohio, assignors to the United States of America as represented by the Secretary of the Interior

Filed Feb. 14, 1969, Ser. No. 799,454

Int. Cl. B01d *21/24*

U.S. Cl. 210—86 **6 Claims**

This invention relates to an underwater storage tank for the temporary storage of liquids such as overflow storm water. The tank consists of top and bottom walls with at least the top wall being a flexible and collapsible membrane made of rubber or similar material and a metal framework of piping to which the membranes are secured. The structure is placed in position on the bottom of a lake, for example, and is connected, by means of an inlet-outlet pipe, to a sewer system. The pipes of the metal framework include jets which are connected to a source of liquid under pressure which can be used for flushing the tank. The tank also includes a cover for the inlet-outlet pipe which assists in disbursing large



pieces of sediment and also assists in removing the same from the tank. The tank also includes vent valves for the escape of gases which may evolve while the sewage is in the tank and furthermore includes means for determining the volume of the tank at any given time.

3,572,507

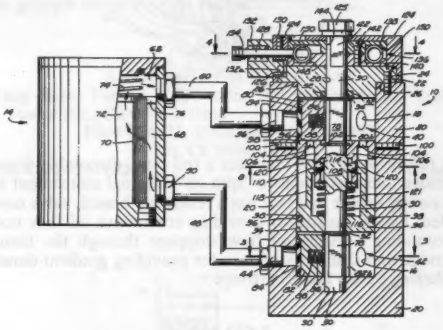
CONTROL DEVICE FOR SELECTIVE DELIVERY OF A FLUID UNDER PRESSURE

John Juskevic, 7265 Orchard Road, Dearborn, Mich.

Filed May 12, 1969, Ser. No. 823,708

Int. Cl. B01d *35/12*

U.S. Cl. 210—97 **12 Claims**



The fluid control device functions to deliver fluid under pressure to a selected one of a pair of fluid processing units. The control device includes a movable piston which is displaceable when the pressure of the fluid flowing through a selected one of the processing units exceeds a predetermined pressure. When the displacement of the piston occurs, the fluid control device directs the fluid under pressure to be processed into the second of the pair of fluid processing units while closing off the first fluid processing unit.

3,572,508

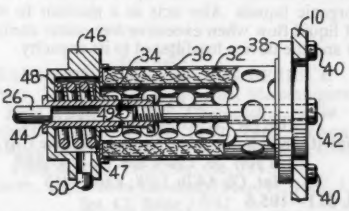
FILTER SYSTEM FOR HYDRAULIC CIRCUIT

Roger A. Rice, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed June 30, 1969, Ser. No. 837,529

Int. Cl. B01d *35/14, 35/02*

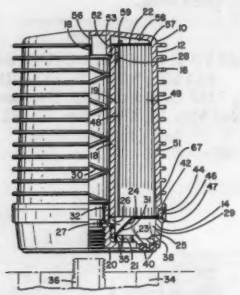
U.S. Cl. 210—130 **9 Claims**



A hydraulic circuit including a reservoir, a pump for withdrawing fluid therefrom and for directing it under pres-

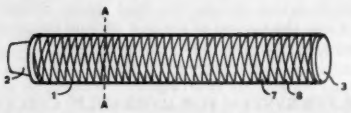
sure through a control valve and to a hydraulic motor and means for directing return fluid back to the reservoir and through a filter which is disposed entirely within the reservoir. The filter has no external fluidtight housing and fluid is filtered by passing outwardly through a hollow filter unit so that the filtered fluid passes at relatively low pressure and velocity into the body of fluid in the reservoir to avoid agitating and aeration of the fluid supply therein.

3,572,509
TISSUE ROLL OIL FILTER ASSEMBLY
Rolland W. Dexter, San Diego, Calif., assignor to Auto-Life Products Inc., San Diego, Calif.
Filed June 19, 1969, Ser. No. 834,659
Int. Cl. B01d *35/14, 27/10*
U.S. Cl. 210—130 **6 Claims**



A full flow oil filter that uses a roll type, disposable tissue cartridge and that employs "spin on" external attachment to an existing engine and that has a resiliently biased, valve controlled, bypass means for providing continuous oil flow notwithstanding possible oil flow stoppage through the tissue cartridge and that has structure for providing gradient density filtering by the tissue cartridge.

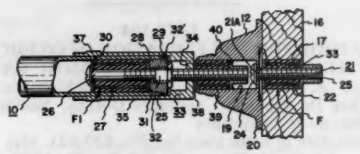
3,572,510
LIQUID-FUEL MONITOR FILTER
Samuel J. Lyda, Rte 2, Flat Rock, Ala.
Filed Apr. 24, 1969, Ser. No. 818,924
Int. Cl. B01d *39/00*
U.S. Cl. 210—502 **1 Claim**



An improved filter device employing organic water-soluble resin as the filter material for effectively removing free-water and other contaminants from liquid hydrocarbon fuels and other organic liquids. Also acts as a monitor to completely shut off liquid flow when excessive free-water contaminant is present and the device has filtered to its capacity.

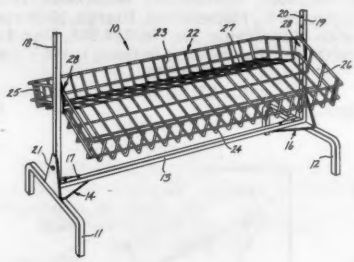
3,572,511
MULTIPLE MEMBER ASSEMBLY
Lee Triplett, 2878 South 8600 West, Salt Lake City, Utah
Filed July 26, 1968, Ser. No. 747,952
Int. Cl. A47h *1/08;* **F16b** *7/18*
U.S. Cl. 211—105.6 **1 Claim**

A multiple member assembly which includes interiorly located, compression-type friction locks for releasably securing two or more members of the assembly together. One of the members can comprise a work piece, when desired. In one embodiment of the invention the multiple member assembly, constructed in accordance with the teachings of the



invention, comprises an elongate rod assembly and provides means for mounting the assembly between two supports, such as wall panels, and also for tightening the same into position.

3,572,512
DISPLAY TRAY AND BRACKET ASSEMBLY
Walter H. Schray, Battle Creek, Mich., assignor to United Steel and Wire Company, Battle Creek, Mich.
Filed Oct. 2, 1968, Ser. No. 764,532
Int. Cl. A47f *3/14, 5/10*
U.S. Cl. 211—133 **6 Claims**

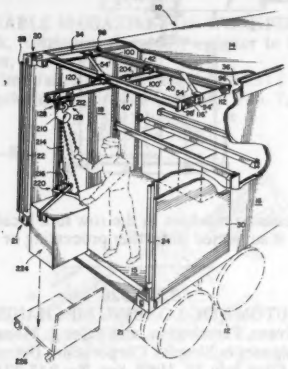


A shelf bracket assembly for a display tray which is positionable between a pair of horizontally spaced posts, said posts having opposed surfaces with a plurality of axially aligned, vertically spaced, openings therein. A pair of first members are provided with projection means thereon which are receivable into the openings in the posts. The first members are provided with first flange means for engaging the sides of the posts thereby preventing same from twisting relative thereto. A pair of second flange means extend also from said first members laterally of the first flange means. A pair of second members are fixed to the display tray and have means thereon for releasably securing same to the second flange means on the first members so that the display tray will be supported on and by the posts. The second members can be separated from the first members for purposes of adjustment in the height of the first members relative to the posts and for the purpose of disassembly.

3,572,513
TROLLEY CRANE APPARATUS
Keith W. Tantlinger, Grosse Pointe Shores, and Richard T. Fujioka, Oxford, Mich., assignors to Fruehauf Corporation, Detroit, Mich.
Filed Mar. 11, 1969, Ser. No. 806,231
Int. Cl. B66c *17/00*
U.S. Cl. 212—10 **13 Claims**

A generally rectangular support framework is mounted for movement along a pair of fixed spaced parallel tracks. The framework comprises two interconnected portions each of which is of generally U-shaped configuration and includes a

long and a short leg, the long leg of one of said framework portions being detachably connected with the short leg of the other of the framework portions. An elongated trolley support is mounted on said support framework for movement laterally with respect thereto. A trolley means is mounted for movement longitudinally along the trolley support.

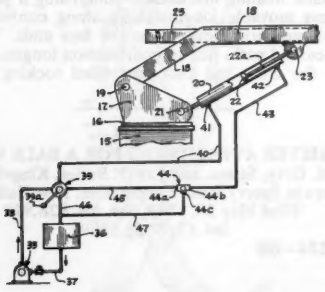


3,572,514

METHOD AND SYSTEM FOR AVOIDING DAMAGE TO DERRICKS BY PREVENTING OVERLOAD CONDITIONS

Charles J. Sauber, Sauber Road, Virgil, Ill.

Filed Aug. 12, 1968, Ser. No. 751,901
Int. Cl. B66c *23/06*
U.S. Cl. 212—35 **2 Claims**



The invention involves a method of operating a hydraulic actuated derrick or crane while lifting or pulling anchored objects by winching with the boom resting on a stiff leg and the derrick control in the boom down position. A pressure relief valve and bypass line is provided in the hydraulic circuit to function in lieu of and in conjunction with possible downward movement of the boom thus avoiding damage to the derrick or boom.

3,572,515

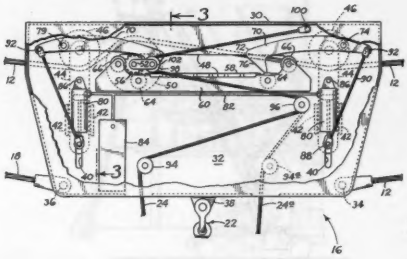
LOGGING GRAPPLE CARRIAGE

Philip F. Hahn, Eugene, Oreg., assignor to Georgia-Pacific Corporation, Portland, Oreg.

Filed Aug. 11, 1969, Ser. No. 848,906
Int. Cl. B66c *21/00*
U.S. Cl. 212—84 **8 Claims**

A carriage is designed for use with a logging grapple shiftable between open and closed positions by changes in the length of its operating lines. The carriage has connecting means for connecting it with the grapple and with conventional outhaul and inhaul cables. It is provided further with a pair of suspension members adapted to track on the outhaul cable and thereby suspend the carriage. The suspension members move up and down upon alternately applying and releasing the grapple weight.

A grapple-actuating sheave frictionally engages the outhaul cable. The sheave is shiftable by cable movement between two terminal positions at the respective ends of a horizontal track. Grapple operating line guides on the sheave and on the carriage are so arranged that the sheave shortens the grapple lines when it moves to one of its terminal positions and lengthens them when it moves to the other. This alternates the grapple between open and closed positions.

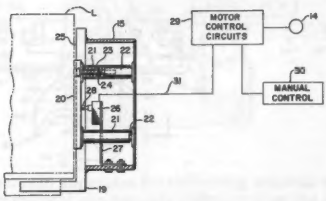


3,572,516

ANTIPUSH STACKER CRANE

Kang Suez, Forrest City, Ark., assignor to Eaton Yale & Towne Inc., Cleveland, Ohio

Filed Oct. 21, 1968, Ser. No. 769,093
Int. Cl. B66c *19/00*
U.S. Cl. 212—132 **6 Claims**



The load carriage of a stacker crane is equipped with a vertical plate that is spring pressed to a position slightly in advance of the rearward vertical parts of load forks on the carriage, so as to engage the load first when the crane moves the forks horizontally toward a load engaging position. When depressed by contact with the load, the plate actuates a switch that stops the operation of the crane motor whereby to control stresses acting in the crane mast incidental to the movement of the forks against the load. In a further form, the forks are themselves mounted to yield so as to actuate the switch.

3,572,517

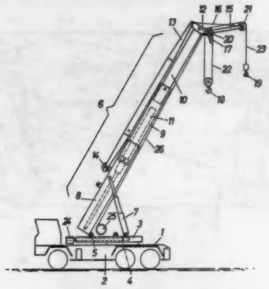
TRANSPORTABLE CRANE OR DERRICK

Hans Liebherr, 795 Biberach ander Riss, Memmingerstrasse; Franz Josef Fenzl, 795 Biberach ander Riss, Schlierenbachstrasse 57, and Peter Paul Weisser, 795 Biberach ander Riss. Dittmarstrasse 33, Munich, Germany

Filed Mar. 7, 1968, Ser. No. 711,265
Claims priority, application Germany, Mar. 11, 1967, L55,989
Int. Cl. B66c *23/62*
U.S. Cl. 212—144 **3 Claims**

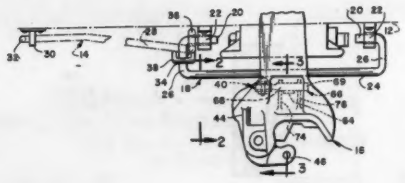
A transportable crane or derrick comprising a mast or column pivotally mounted on the platform of a vehicle so as

to be capable of being tilted with respect to the platform. The mast includes a main jib pivotally mounted at the head of the mast to pivot in the tilting plane of the mast. On the



opposite side of the mast from the main jib there is mounted a sheave providing guide means for a cable having a load-carrying hook mounted thereon.

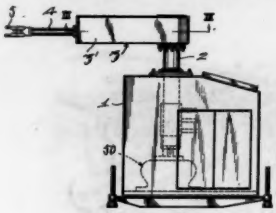
3,572,518
RAILWAY COUPLER
Lee Gail Wisler, Beloit, Ohio, assignor to Amsted Industries, Incorporated, Chicago, Ill.
Filed Dec. 16, 1968, Ser. No. 784,126
Int. Cl. B61g *1/08, 3/20*
U.S. Cl. 213—166 **10 Claims**



A conventional Association of American Railroads (AAR) type F coupler head is rotatable engaged with a railway car and has a rotor engaged with the coupler's unlocking mechanism. A rotor arm is secured to the rotor for corresponding rotational movement outboard from one of the rotary shaft walls of the coupler head and projects downwardly away from the bottom of the coupler head. The rotor arm may be pivoted upwardly, rotating the rotor and unlocking the lock of the unlocking mechanism, by a U-shaped member pivotally secured to the railway car. The lockhole walls of the coupler head are modified to allow pivotal movement of the U-shaped member.

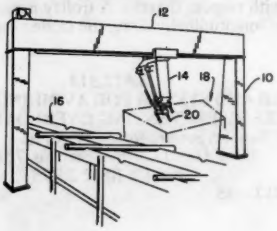
3,572,519
ARTICLE TRANSFER APPARATUS ADAPTED TO AUTOMATICALLY FEED MATERIAL TO ONE OF PRESSES OR OTHER PROCESSING MACHINES
Yoshitomo Tezuka, Tokyo, Japan, assignor to Kabushiki Kaisha Aida Tekkosho, Kanagawa-Ken, Japan
Filed Apr. 3, 1969, Ser. No. 813,206
Int. Cl. B25j *9/00*
U.S. Cl. 214—1 **2 Claims**

An automatically operated article transfer apparatus for feeding material to one or a first of presses or other processing machines aligned in a working row, transferring a semiprocessed product between adjacent processing machines in the row, or discharging a finished product from



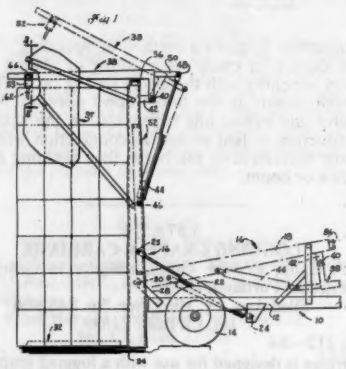
the last processing machine in the row to a location at which the product is subjected to further processing or is shipped.

3,572,520
AUTOMATIC LOADING MECHANISM
Dewey M. Evans, Farmington, and Peter J. Manetta, Warren, Mich., assignors to Simplex Corporation, Detroit, Mich.
Filed July 28, 1969, Ser. No. 845,221
Int. Cl. B23b *13/00*
U.S. Cl. 214—1 **10 Claims**



Automatic loading mechanism comprising a pair of elongated arms movable longitudinally along converging paths with work supporting cradles at the free ends. The cradles move in curved paths due to combination longitudinal movement of the arms and cam controlled rocking movement thereof.

3,572,521
RETRIEVER ATTACHMENT FOR A BALE WAGON
Donald M. Grey, Selma, and Lee D. Butler, Kingsburg, Calif., assignors to Sperry Rand Corporation, New Holland, Pa.
Filed May 29, 1969, Ser. No. 828,910
Int. Cl. B65g *57/08*
U.S. Cl. 214—6B **1 Claim**



The invention relates to a bale wagon for retrieving a stack of bales using a removably mounted spiked retrieving bar

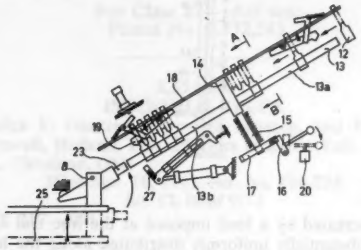
which is attached to the wagon transfer table during retrieval and stored beneath the wagon load bed during other wagon operations.

3,572,522

PIVOTABLE MAGAZINE FOR WORKPIECES

Paul Nesterok, Notzingen, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 27, 1969, Ser. No. 794,112
Claims priority, application Germany, Feb. 7, 1968, P 15 83 985.7
Int. Cl. B65g *60/00*
U.S. Cl. 214—8 2 Claims



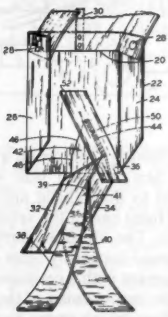
A device for feeding workpieces in which an inclined rod is pivotally mounted so that each free end can alternately occupy a position for the stringing of workpieces thereon and for transferring workpieces therefrom, for further treatment.

3,572,523

SILAGE DISTRIBUTOR

Hermann K. Cymara, R.D. #2, Newfield, N.Y.

Filed July 10, 1969, Ser. No. 840,652
Int. Cl. B65g *65/32*
U.S. Cl. 214—17 3 Claims



Silage distributor adapted for attachment to the silo fill spout discharge end, and which is constructed with deflectors inclined in four directions to provide uniform distribution of the silage discharged into the distributor, and without requiring power.

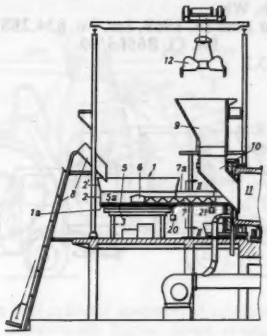
3,572,524

MECHANICAL EQUIPMENT FOR CHARGING SLUDGE AND/OR SEMISOLID AND FLUID WASTE MATERIAL INTO ROTARY INCINERATING KILNS

Heribert Muckenheim, Dietikon, Switzerland, assignor to Von Roll AG, Gerlafingen, Switzerland

Filed Nov. 25, 1968, Ser. No. 778,726
Claims priority, application Switzerland, Nov. 28, 1967, 16,691/67
Int. Cl. F23k *3/14*
U.S. Cl. 214—19 4 Claims

There is disclosed new and improved mechanical charging equipment for rotary incinerating kilns. This equipment renders it possible for sludges and/or viscous, pasty and/or semisolid and fluid waste materials to be fed into such incinerators indifferently, regardless of their condition at delivery, whether in bulk or containers.

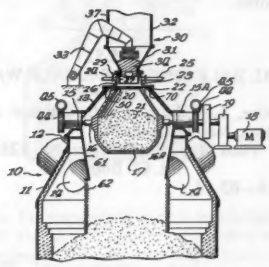


3,572,525

BLAST FURNACE CHARGING APPARATUS

William E. Slagley, Crown Point, and Lawrence G. Maloney, Munster, Ind., assignors to Inland Steel Company, Chicago, Ill.

Filed Apr. 14, 1969, Ser. No. 815,740
Int. Cl. F27b *1/20*
U.S. Cl. 214—35 8 Claims



Improvements in apparatus for delivering material to a vessel having an internal gas pressure different than the external gas pressure applied to the vessel, said vessel having an opening through which material can be delivered or supplied from outside to inside the vessel, a closure means which movably plugs and closes the vessel opening to keep the vessel internal gas pressure different than the external pressure and a material-receiving open-mouthed hollow receptacle movably mounted in the vessel so that the mouth can be brought into communication with the vessel opening and receptacle moving means to displace the receptacle and pour material from the receptacle through the mouth and into the vessel, the improvements comprising: means to displace the receptacle into pressure contact with a first sealing ring with the receptacle mouth in communication with the vessel opening, said first sealing ring being supported by the vessel for use in combination with the receptacle for blocking passage of gas between the vessel interior and exterior at least when the vessel opening is open, said sealing ring circumscribing the vessel opening and having a seating surface for contracting the receptacle exterior surface around its mouth.

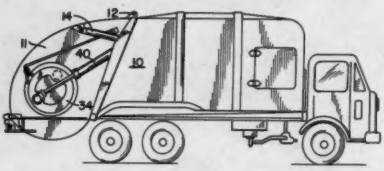
Further improvements are a sealing ring mounted inside the vessel and below the first sealing ring, said second sealing ring having a larger open area than the first sealing ring, means to rotate the receptacle to position an exterior continuous surface thereof in spaced-apart position relative to the second sealing ring, and means to displace the receptacle continuous surface into contact with the second sealing ring to thereby seal off the vessel interior and permit replacement of the first sealing ring.

3,572,526

PACKING PLATE ASSEMBLY FOR REFUSE VEHICLE

Cyril R. Gollnick, Oshkosh, Wis., assignor to Leach Company, Oshkosh, Wis.

Filed June 18, 1969, Ser. No. 834,288
Int. Cl. B65f 3/00
U.S. Cl. 214—83.3 22 Claims



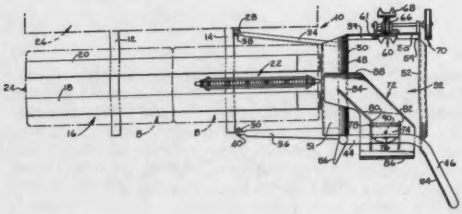
The refuse vehicle has a storage body with a loading hopper at the rear end thereof. A packer plate is mounted in the hopper by a first pair of pivots engaged respectively with a pair of links which are pivoted to the hopper sidewalls. The packing plate includes a second pair of pivots respectively connected to a pair of disks, the latter being rotatably mounted in the hopper sidewalls. A single pair of fluid-operated rams is connected with the disks for rotating the latter to provide the desired movement of the packer plate. A transversely extending torsion bar is connected to both disks to ensure movement in unison of the latter. The rams are connected to the disks to obtain maximum mechanical advantage when the refuse in the hopper is being compressed and to permit only one ram to occupy a dead center position at any one time.

3,572,527

PIVOTAL BALE SHOE FOR A BALE WAGON BALE LOADER

Lee D. Butler, Kingsburg, Calif., assignor to Sperry Rand Corporation, New Holland, Pa.

Filed May 29, 1969, Ser. No. 828,887
Int. Cl. B60p 1/36
U.S. Cl. 214—83.14 2 Claims



A bale loader, for use on an automatic bale-handling wagon, having a pivotally mounted bale shoe thereon adapted to engage a bale of crop material and positively force the bale rearwardly against a lifting means to facilitate elevating the bale from a field and transferring it to the wagon.

3,572,528

UNIFORM STRESS CANTILEVER BEAM

Michael D. Morton, Hinsdale, and Richard R. Conners, Chicago, Ill., assignors to International Harvester Company, Chicago, Ill.

Filed May 14, 1969, Ser. No. 824,548
Int. Cl. B66f 9/00, 11/00
U.S. Cl. 214—145 8 Claims

A cantilever beam for use as a safety frame or a loader boom arm for a tractor having angle or channel members forming an enclosed hollow section beam. The members are secured together by welds which are spaced at progressively wider intervals from the supported end of the beam so that

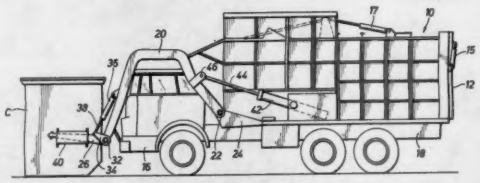
the stress created by a load imposed at the free end of the beam is substantially uniformly distributed along the length thereof.

3,572,529

FRONT-END LOADING REFUSE VEHICLE

Orin M. Anderson, P.O. Box 14,147, San Antonio, Tex.

Filed Feb. 3, 1969, Ser. No. 796,053
Int. Cl. B65f 3/02
U.S. Cl. 214—302 9 Claims



A refuse vehicle having a body with a top opening and provided with a lift arm at each side whose rear ends are pivotally connected to the vehicle and whose forward ends extend beyond the front end of the vehicle when the arms are in lowered position. The lift arms carry vertically swingable tilt arms which extend forwardly from the front ends of the lift arms for engagement with a container which is to be lifted and emptied into the top opening of the body. The top opening has a hinged door which opens to allow dumping of the container through the top opening.

An electropneumatic-hyraulic system is provided for operating the loading mechanism automatically to lift the container, level the container during the lifting of the same, open the top door and invert the container through the top opening. The system may further operate automatically to redeposit the container on the ground and close the top door. The electropneumatic-hydraulic system includes a valve bank having hydraulic valves, operated by pressure cylinders which are supplied with air under pressure from a source of such air under the control of valves which are electrically operated.

The vehicle is provided with rests for the front ends of the lift arms to prevent damage to the equipment due to bouncing or vertical oscillation of the lift arms when the vehicle is moving over rough grounds or bumps and means is also provided for holding the front ends of the lift arms in somewhat elevated positions when a container is positioned thereon to hold the container clear of the ground when the vehicle is to be used for collecting refuse by moving the vehicle along the street while loading the container manually.

The vehicle may have a cab at the front end which is provided with a forwardly tiltable body to allow access to an engine beneath the cab and the cab body is provided with a rub-rail at the front to protect the same against damage by accidental engagement with a container being lifted. The rub-rail is hinged or articulated to allow the cab body to be tilted to open position without disconnecting the rub-rail.

The operating system is designed to permit manual control of the movements of the loading mechanism at any stage of operation.

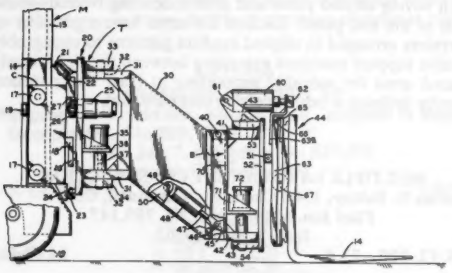
ERRATUM

For Class 214—516 see:
Patent No. 3,572,563

3,572,530
INDUSTRIAL TRUCK

Frederick F. Ohntrup, Plymouth Meeting, and Russell A. Cornwall, Holland, Pa., assignors to Eaton Yale & Towne Inc., Cleveland, Ohio

Filed Apr. 16, 1969, Ser. No. 816,735
Int. Cl. B66f *9/14*
U.S. Cl. 217—730 **8 Claims**



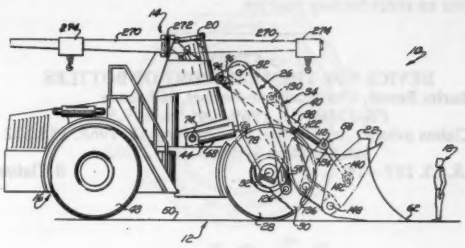
In an industrial truck a carriage is mounted for vertical movement on a pair of spaced uprights. An arm base roll is mounted on said carriage for movement transversely of the truck. A load arm rotates on said base on a generally vertical axis so as to be movably positionable with respect to an axis extending transversely of the truck. A load carrier is pivoted on a generally vertical axis at the end of the load arm opposite its pivot on the arm base. By rotating both the load carrier and the load arm, a load on the carrier may be moved to one side or the other of the truck and also forwardly, without at any time moving the load relatively to the truck to a position where it will greatly effect the stability of the truck.

3,572,531
EXCAVATOR ASSEMBLY

Bronislaus I. Ulinski, Palm Beach, Fla., assignor to Eaton Yale & Towne Inc., Cleveland, Ohio

Filed July 11, 1969, Ser. No. 840,912
Int. Cl. B66f *9/00*
U.S. Cl. 214—778 **20 Claims**

An improved excavator assembly includes a main arm which is pivotally connected to an articulated vehicle, a lift arm pivotally connected to the main arm, and a bucket which is pivotally connected to an outer end portion of the lift arm. The main arm is pivoted forwardly by a first piston and cylinder assembly to crowd or force the bucket into a pile of dirt or other material while the vehicle remains stationary. A second piston and cylinder assembly is then operated to pivot the bucket to an upright load-carrying position. Once the bucket has engaged a load, a third piston and cylinder assembly is operated to pivot the lift arm upwardly to raise the bucket and the load. After the load has been raised, the

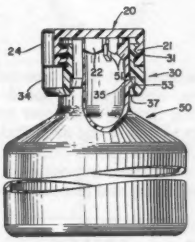


second piston and cylinder assembly is operated to pivot the bucket to a downwardly facing down position to thereby dump the load.

3,572,532
SAFETY CLOSURE

John J. Shannon, 425 Foster Road, Tewksbury, Mass.

Filed Aug. 11, 1969, Ser. No. 849,084
Int. Cl. B65j *55/02*; **A61j** *1/00*
U.S. Cl. 215—9 **10 Claims**

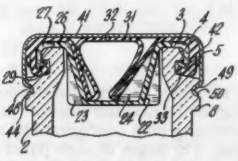


A safety closure for preventing access to containers such as drug bottles and the like by children and other irresponsible persons. The closure includes two major parts. One part is a sleeve which is axially secured to the container neck and has an outer threaded surface. The sleeve is free to rotate on the neck. The other part is a cap which may be threaded to the sleeve, but is secured from removal from the container so long as it is threaded on the sleeve. Preliminary rotation of the sleeve is necessary to free the cap for removal in the normal manner.

3,572,533
INFANT FEEDING BOTTLE

Stanley J. Koll, Keansburg, N.J., assignor to American Flange & Manufacturing Co. Inc, New York, N.Y.

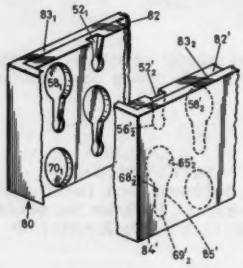
Continuation-in-part of application Ser. No. 686,856, Nov. 30, 1967, now Patent No. 3,477,603. This application May 12, 1969, Ser. No. 823,863
Int. Cl. A61j *9/00*; **B65d** *43/02*
U.S. Cl. 215—11 **6 Claims**



A self-contained infant formula package comprising a bottle having affixed thereto a nipple and insert subassembly,

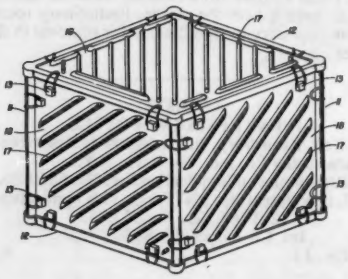
the insert forming a fluid barrier isolating the nipple from the formula during storage. The package is sealed with an overlying cap which holds the nipple in depressed stored position and is easily torn away causing the nipple to automatically assume an erect feeding position.

3,572,534
DEVICE FOR THE TRANSPORT OF BOTTLES
Charles Benoit, Chatuzange-le-Goubet, 26 France
Filed Mar. 21, 1969, Ser. No. 809,304
Claims priority, application France, May 28, 1968, 153,122
Int. Cl. B65d *81/00, 85/00, 25/02*
U.S. Cl. 217—19 **8 Claims**



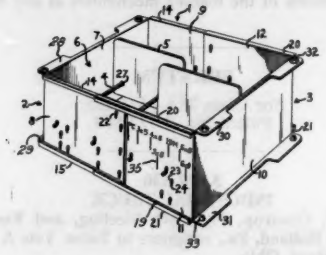
A device for the transport of bottles comprising two racks facing each other, lining the opposed faces of a parallelepipedic case and having cutouts or notches the shape of which corresponds to that of the neck and bottom of a bottle, respectively. The notches are so disposed in the racks that a bottle is securely maintained in position when its neck and its bottom fit into two facing and associated notches.

3,572,535
COLLAPSIBLE STORAGE CONTAINER
William W. Kinzie, 907 Symphony, Ogden, Utah
Continuation-in-part of application Ser. No. 775,885, Nov. 14, 1968, and a continuation-in-part of 792,335, Jan. 21, 1969. This application Jan. 21, 1969, Ser. No. 792,450
Int. Cl. B65d *7/00*
U.S. Cl. 220—4 **10 Claims**



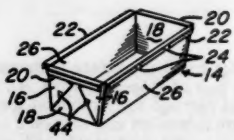
A collapsible, reuseable, storage and shipping container including four separate rectangular sidewall panels, preferably of identical interchangeable configuration; a bottom panel; and a cover panel. The edges of each panel are adapted for releasable joining with edges of adjacent panels so that the container may be assembled and disassembled as desired. The joints between panels may be provided with appropriate sealant to make the assembled container watertight.

3,572,536
ADJUSTABLE CARD FILE
Norvin J. Wehner, Kansas City, Mo., assignor to Cramer Industries, Inc., Kansas City, Kans.
Filed Apr. 14, 1969, Ser. No. 815,541
Int. Cl. B65d *25/06*
U.S. Cl. 220—22.1 **6 Claims**



An adjustable card file for holding a plurality of cards having a pair of transversely spaced telescoping frame members each having an end panel and arms extending from opposite ends of the end panel. Each of the arms have a plurality of apertures arranged in aligned random patterns to engageably receive support members extending between the transversely spaced arms for movably supporting at least one partition thereby defining a card-receiving compartment.

3,572,537
MULTIPLE BAKE PAN SET CONSTRUCTION
Charles N. Baltzer, 1360 Custer St., Cincinnati, Ohio
Filed Jan. 6, 1969, Ser. No. 789,147
Int. Cl. B65d *21/02*
U.S. Cl. 220—23.4 **24 Claims**

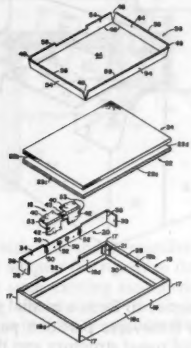


The multiple bake pan set or unit utilizes a rectangular frame of rigid strapping, in which the pans are arranged more or less loosely until a binding harness is applied for clamping the pan rims between rigid elements of the harness and frame. Wire reinforcing for the pan rims is eliminated, and pan replacements are effected on the job with ease and despatch, by removing the harness. Cooperative pan support areas on the frame and harness protect the pans, and especially their upper peripheral portions, from damage in use.

3,572,538
HINGE RECEIVING ELEMENT
Robert G. Bergh, and George G. Bergh, North Attleboro, Mass., assignors to Bergh Bros. Co., Inc., Attleboro Falls, Mass.
Filed Sept. 17, 1968, Ser. No. 760,323
Int. Cl. B65d *43/16*
U.S. Cl. 220—31 **7 Claims**

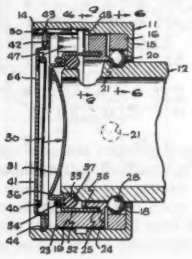
Apparatus for mounting a hinge in a fixed position close to but separate from the interior surface of a box component wall member. The apparatus includes a hinge receiving ele-

ment to which the hinge is directly attached by any known means. The hinge receiving element is suitably dimensioned to fit between and be located by spaced flanges extending in-



wardly from the upper and lower edges of the wall member. Separable bottom and insert members cooperate with the spaced flanges to wedge the hinge receiving element in place.

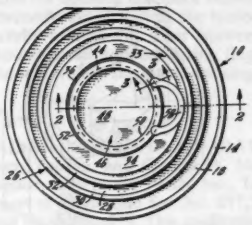
3,572,539
PRESSURE-LOCKED CAP
Wolfgang G. Wunderlich, Saugus, Calif., assignor to Roylyn Incorporated, Glendale, Calif.
Filed July 7, 1969, Ser. No. 839,250
Int. Cl. B65d *41/04*
U.S. Cl. 220—40 **7 Claims**



The application discloses a cap for closing a nipple or tube, the cap having a rotatable collar and a locking mechanism operated thereby for securing the cap on the end of the nipple. The cap is provided with an internal actuator and seal ring assembly responsive to pressure for the purpose of automatically locking the collar against rotation and thereby preventing the locking mechanism from being released.

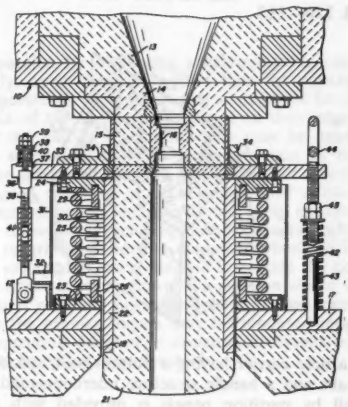
3,572,540
CAN CLOSURE
Leonard Thomas LaCroce, Paramus, N.J., assignor to American Can Company, New York, N.Y.
Filed Apr. 1, 1969, Ser. No. 812,079
Int. Cl. B65d *41/00, 43/10*
U.S. Cl. 220—42 **4 Claims**

A paint can is provided with a primary metal friction closure which is formed with an opening which permits pigments, etc. to be added to the paint without requiring removal of the primary closure. The metal of the primary closure around the opening is curled upwardly and outwardly to prevent its corrodible raw edge from coming into contact with the paint, and the opening is sealed by a removable auxiliary plastic snap-on plug having a flange which is recessed into the surface of the adjacent portion of the primary closure to shield it against inadvertent snagging and loosening



during shipment and storage. The auxiliary plug is made of a translucent or transparent material to permit the consumer to visually observe the color of the paint within the can.

3,572,541
INLET CONSTRUCTION FOR ENCLOSED VESSELS
James T. Shapland, Pittsburgh, Pa.
Filed Mar. 20, 1969, Ser. No. 808,841
Int. Cl. B65b *3/00;* **B65c** *3/00*
U.S. Cl. 220—86 **10 Claims**

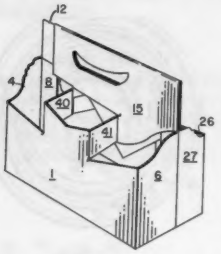


An inlet construction especially for vessels which receive molten metal where it is necessary to provide a seal against loss of vacuum or escape of gas. Includes an axially movable tube and spring means urging the tube upwardly. Tube can engage the bottom of a bottom-pour vessel equipped with a sliding-gate-type of closure. Avoids need for tube on bottom of pouring vessel.

3,572,542
ARTICLE CARRIER HAVING IMPROVED LOCKING MEANS
Prentice J. Wood, Jonesboro, and James T. Stout, Doraville, Ga., assignors to The Mead Corporation
Filed June 19, 1969, Ser. No. 834,728
Int. Cl. B65d *75/00, 5/48*
U.S. Cl. 220—111 **3 Claims**

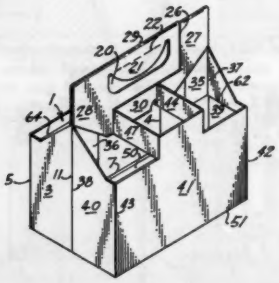
A collapsible basket-style article carrier having a bottom panel, sidewalls foldably joined to the side edges of the bottom panel, end panels foldably joined to the end edges of the sidewalls, riser panels foldably joined to the inner edges of the end panels, and handle panels foldably joined to the riser panels and disposed medially of the carrier is provided with an improved setup locking arrangement wherein a locking hook at the bottom end of the riser panels at one end of the carrier is disposed for engagement with the end edge of the

bottom panel and is provided with a weakened fold line whereby the locking hook is movable in a transverse



direction during the performance of a locking operation thereby to insure secure locking engagement and a fully squared up condition of the carrier when set up.

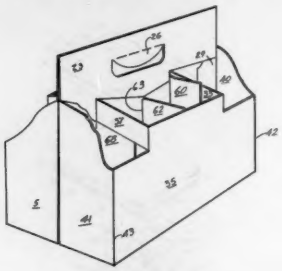
3,572,543
ARTICLE CARRIER
Homer W. Forrer, and Prentice J. Wood, Jonesboro, Ga., assignors to The Mead Corporation
Filed June 19, 1968, Ser. No. 738,206
Int. Cl. B65d *75/00*
U.S. Cl. 220—113 **4 Claims**



An article carrier having a bottom wall, spaced side and end walls and a handle structure interconnected with each sidewall by partition panels is provided with reinforcing means affixed to the bottom wall and to the adjacent portions of the sidewalls as well as to the handle and partition structure and the upper portions of the side and end walls so that each article receiving cell is reinforced at its bottom to take the weight of the article and is reinforced entirely about its upper portions so as to secure the article therein against any inadvertent rupture of the upper portion of the cell. The reinforcing strips are applied to the main blank by simply affixing a common center strip to the web of material from which the main blanks are formed, the bottom panels of the blanks being disposed in aligned relationship along the reinforced common reinforcing strip. Additional strips are arranged on either side of the common center strip and coincide with other portions of the blanks which are aligned with each other and which correspond to the handle, partition structure and the upper portions of the side and end walls.

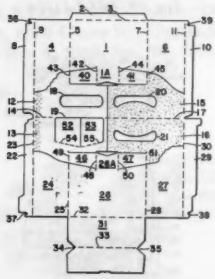
3,572,544
ARTICLE CARRIER
Homer W. Forrer, Jonesboro, Ga., assignor to The Mead Corporation
Filed Feb. 24, 1969, Ser. No. 801,259
Int. Cl. B65d *5/46, 5/48*
U.S. Cl. 220—113 **3 Claims**

An article carrier is disclosed having a bottom wall, sidewalls foldably joined to the side edges of the bottom wall, end wall panels foldably joined to the end edges of the sidewalls and extending inwardly therefrom, medial partition structure including medial panels joined to the end walls at



the ends of the carrier to form a medial partition and a handle together with transverse partition panels interconnected between the medial panel structure and the sidewalls to form substantially full depth transverse partitions.

3,572,545
ARTICLE CARRIER HAVING IMPROVED BRACING KEEL
James T. Stout, Doraville, Ga., assignor to The Mead Corporation
Filed July 3, 1969, Ser. No. 838,961
Int. Cl. B65d *75/00*
U.S. Cl. 220—113 **4 Claims**

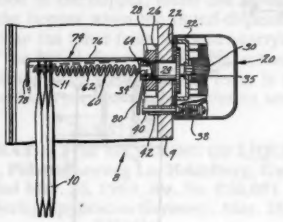


A collapsible basket-style article carrier having a bottom panel, sidewalls foldably joined to the side edges of the bottom panel, end panels foldably joined to the end edges of the sidewalls, riser panels foldably joined to the inner edges of the end panels, and a multi-ply handle adjoined to the riser panels and disposed medially of the carrier is provided with an improved keel arrangement wherein a pair of bracing struts are struck from one ply of the handle and folded downwardly and outwardly along upwardly divergent fold lines and into positions of flat face contacting overlapped relationship with the riser panels at each end of the carrier respectively.

3,572,546
CELLULAR MAGAZINE-TYPE ARTICLE DISPENSING MACHINE
Stanley O. Schlaf, Rte. 1, Box 233, Winfield, Mo.
Filed Dec. 30, 1968, Ser. No. 787,877
Int. Cl. G07f *11/00*
U.S. Cl. 221—75 **14 Claims**

A dispensing machine having article carrying spindles provided with thin mounting shanks which fit into sockets in drive shafts forming part of drive units. Each spindle shank has a tang which is engaged by a transversely extending pin

in the drive shaft to which the spindle connects. The pins extend through the sockets and are adapted to shift laterally therein under spring bias so that the spindles can be detached for loading. An adapter for converting existing dispensing



machines for use with thin shank spindles of the aforementioned variety. The adapter fits rigidly in the enlarged sockets of a drive shaft on such existing machines and has a socket adapted to receive the shank of the spindle as well as a laterally shiftable pin to hold the spindle therein.

3,572,547

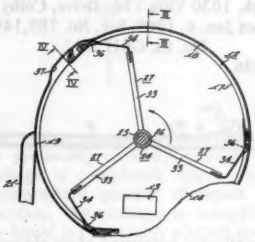
PLATELESS PLANTER

Maynard E. Walberg, Waukesha, Wis., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed July 22, 1969, Ser. No. 843,544

Int. Cl. A01c *7/08*

U.S. Cl. 221—220 **10 Claims**



A plateless planter wherein rotating fingers pick up seeds, move them in a groove in the periphery of a drum surrounding the fingers to a point where the groove is interrupted with depressions so that excess seed can drop out and return to the seed supply while the singulated seed is moved along the groove by the finger to a point of discharge.

3,572,548

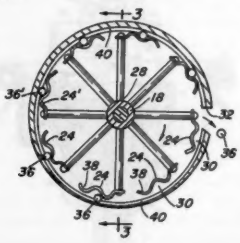
PLATELESS SEED PLANTER

Bernard P. Fuchs, R.R. #3, and Byron P. Sanderson, P.O. Box 233, Rochelle, Ill.

Filed June 16, 1969, Ser. No. 833,282

Int. Cl. B65h *5/00*

U.S. Cl. 221—225 **9 Claims**



A hollow generally cylindrical planter housing mounted on a horizontal axis and closed by end plates, one of which has an opening to the interior of the housing adjacent the bottom thereof for the entry of a seed supply, the housing having an outlet opening in its cylindrical wall for discharge of seeds, a spring finger orbiting the housing axis close to the surrounding wall, and means for opening the space between the spring finger and the circumferential wall at the bottom portion of the housing whereby a seed will enter between the spring finger and the housing wall and the spring finger will carry the seed along the said wall to the outlet opening.

3,572,549

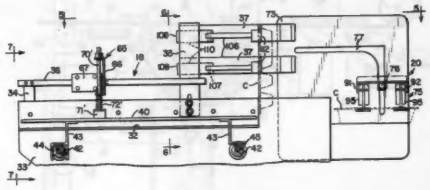
CONTAINER-DISPENSING APPARATUS

Charles H. Willsey, Topeka, and Francis W. Majors, Ozawkie, Kans., assignors to Seymour Foods, Inc., Topeka, Kans.

Continuation-in-part of application Ser. No. 497,242, Oct. 18, 1965, now Patent No. 3,461,459. This application Sept. 30, 1968, Ser. No. 763,663

Int. Cl. B65h *3/26*

U.S. Cl. 221—226 **13 Claims**



An apparatus for dispensing article-receiving containers, specifically, open cartons or filler flats for packing eggs, which apparatus is characterized by a magazine for supporting a stack of the containers arranged on their edges and a means at the end of the stack which may be operated to withdraw successive endmost containers, one by one, and deposit the same with the open side uppermost on a horizontally disposed conveyor or other support for advance to a packing station or the like, the device being mounted on a swinging frame and including gripper fingers which are operated to grip the endmost container when the frame is swung to engage the stack end and to release the container when the frame is swung down to a position where the container is in a generally horizontal plane. In one form of the apparatus the gripper fingers may be rendered inoperative and the apparatus adapted to dispense containers which do not need to be pulled from the stack.

3,572,550

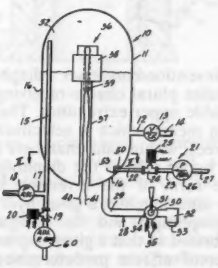
METHOD OF AND APPARATUS FOR CARBONATING, HAVING INTERSECTING STREAMS OF GAS AND LIQUID

Theodore S. Colomina, Utica, Mich.; Thomas E. Davis, Macedonia, Ohio, and Kenneth W. Schang, Dearborn, Mich., assignors to Eaton Yale & Town Inc.

Filed Oct. 14, 1968, Ser. No. 767,163

Int. Cl. B67d *5/56*

U.S. Cl. 222—1 **12 Claims**



A two-stage carbonator for carbonating fluids in a single chamber having a venting system by which the chamber is at

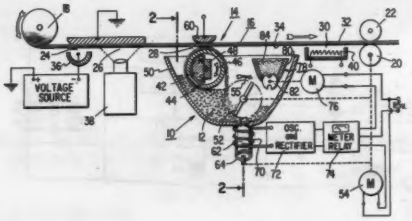
least partially vented of pressure to allow entry of fluid from a low-pressure line. The pressurized gas inlet directs the stream of gas tangentially to the liquid outlet through a normally open valve. The gas stream is thus directed into the chamber during discharge and passes adjacent the discharge opening thereby supercharging the exiting fluid, increasing the degree of carbonation.

3,572,551

APPARATUS FOR MONITORING AND CONTROLLING THE CONCENTRATION OF TONER IN A DEVELOPER MIX

Henderson C. Gillespie, Moorestown; Ralph Herman, Cherry Hill, and Milton M. Sowiak, Trenton, N.J., assignors to RCA Corporation

Filed Mar. 27, 1969, Ser. No. 811,132
Int. Cl. B67d *5/08*
U.S. Cl. 222—56 **6 Claims**



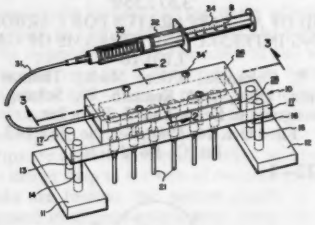
Samples of a developer mix, comprising toner and magnetic particles, are passed continuously through a coil connected in an oscillator circuit. The inductance of the coil changes with variations in the concentration of the toner in the samples of the developer mix, and, consequently, the circuit provides output signals that are related to the concentrations of toner in the samples. Means responsive to the output signals control the addition of replenisher toner to the developer mix as toner is consumed from the developer mix in a developing process.

3,572,552

DIAPHRAGM DISPENSER

Perry W. Guinn, 128 E. 5460 S. Apt. 8, Murray, Utah

Filed July 25, 1969, Ser. No. 844,830
Int. Cl. G01f *11/00*
U.S. Cl. 222—263 **10 Claims**



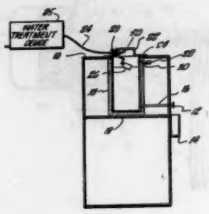
The present invention comprises a diaphragm dispenser for fluids and includes plural charge-receiving chambers having respective variable upper extremities. The latter are defined by a diaphragm means which is selectively deformable, and in desired degrees, within said chambers as fluid pressure is applied to the upper side of the diaphragm. This is accomplished in one form of the invention by a plunger and, preferably, the same actuates a given hydraulic fluid exposed between the diaphragm and the plunger. The plunger is preferably calibrated so that a given depression of the operating piston thereof effects predetermined incremental displacements of respective portions of the diaphragm within the charged chambers so that the latter may receive and discharge respective portions of a test liquid in a manner hereinafter described.

3,572,553

CONVERSION DRINKING WATER SYSTEM

Stanley D. Ogden, 1667 Chevy Knoll Place, Glendale, Calif.

Filed Aug. 8, 1968, Ser. No. 751,081
Int. Cl. B67d *3/00*
U.S. Cl. 222—67 **2 Claims**



A drinking water supply apparatus is described which is capable of providing a constant supply of water by gravity flow from a dispenser. The apparatus is especially useful for converting existing bottle-type water dispensers into a unit which delivers readily available tap water by gravity flow from the existing dispenser outlet valve while avoiding any return flow to the tap water supply line.

3,572,554

PESTICIDE APPLICATOR

Richard S. Kubik, 1030 Villa Vista Drive, Colby, Kans.

Filed Jan. 6, 1969, Ser. No. 789,149
Int. Cl. G01f *1/12*
U.S. Cl. 222—246 **4 Claims**

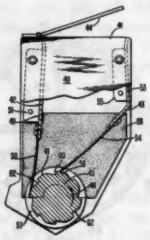
A pesticide applicator consisting of an elongated tube having one end sharpened for insertion into a rodent burrow or the like, means for attaching a container of pesticide to the opposite end of said tube whereby the pesticide flows through said tube by gravity, and accurately controlled valve means in said tube to control said flow.

3,572,555

XEROGRAPHIC TONER DISPENSER

Arthur H. Knight, and Myrl J. Miller, Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

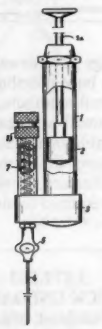
Filed May 27, 1969, Ser. No. 828,268
Int. Cl. G01f *11/06*
U.S. Cl. 222—342 **1 Claim**



Apparatus for dispensing toner into a developing unit of a xerographic-copying machine is disclosed. The dispenser

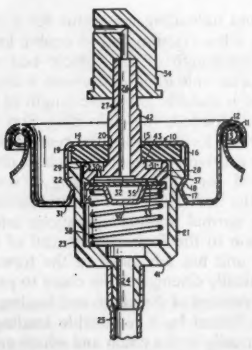
comprises a hopper having sidewalls provided by a pair of resilient members whose lower ends engage the periphery of a rotatable fluted-dispensing shaft located at and forming the bottom of the hopper. The resilient members function to seal the lower portion of the hopper, meter the amount of toner carried from the hopper when the fluted-dispensing shaft is rotated, and clean the toner from the toner-carrying grooves or channels of the fluted-dispensing shaft. Mechanism is provided for indicating when the amount of toner in the hopper has been reduced to a predetermined minimum amount.

3,572,556
APPARATUS FOR METERING OF LIQUIDS
Peter Pogacar, Philosophenweg La, Heidelberg, Germany
Filed Mar. 25, 1969, Ser. No. 810,091
Claims priority, application Germany, Mar. 28, 1968, P31166/
Int. Cl. B67d *5/42;* **A61m** *5/00*
U.S. Cl. 222—400.8 **10 Claims**



A method of and an apparatus for metering of liquids. A canula has a preferably capillary passage whose volume, when the passage is completely filled, corresponds to a precisely predetermined quantity of liquid. In accordance with the invention, the passage is completely filled and thereupon the liquid is completely ejected therefrom so that the quantity of ejected liquid is a precisely metered quantity.

3,572,557
AEROSOL VALVES
Cecil Robert Montgomery Graham, Killara near Sydney, New South Wales, and Lambert Ronald Little, Eastwood near Sydney, New South Wales, Australia, assignors to Samuel Taylor Pty. Limited, Gore Hill, New South Wales, Australia
Filed Oct. 29, 1968, Ser. No. 771,567
Claims priority, application Australia, Nov. 6, 1967, 29481/67
Int. Cl. B65d *83/00*
U.S. Cl. 222—402.22 **11 Claims**

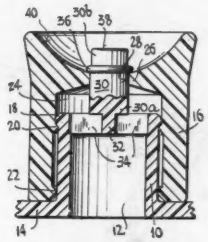


A closure for aerosol containers includes a tubular stem having a bore for discharging the aerosol and the stem has a concentrically arranged flange located at the inlet end of the stem within the container. The flange is formed on one face to provide a cup-shaped surface which is in contact with a first gasket and on its other face to afford a groove communicating between the inlet end to the bore through the stem and an opening through the flange which communicates with the cupeshaped surface. A second gasket is disposed in sealing engagement with the other face of the flange so that aerosol passing through the opening in the flange can flow through the groove only into the inlet end of the bore in the stem.

3,572,558
DROPPER DISPENSER
Robert M. Hooker, P.O. Box 25, Pine Point, Conn.
Filed Jan. 2, 1969, Ser. No. 788,561
Int. Cl. B67d *47/18*
U.S. Cl. 222—420 **4 Claims**

The disclosed dropper dispenser includes a plastic squeeze bottle containing the liquid to be dispensed. A tube extends through the bottle cap with its intake end submerged in the liquid and its discharge end fitted to receive and hold a drop dispenser tip. The tip includes a capillary tube through which extends an elongated drop conveying stem; the tube being deformed to engage the stem and prevent lengthwise movement thereof, while affording a liquid passage therebetween.

3,572,559
MULTIPOSITION DISPENSING CAP
Morton B. Stull, Boonton, N.J. (c/o Stull Engraving Company, 221-223 Banta Ave., Garfield, New Jersey 07026)
Filed Feb. 16, 1968, Ser. No. 706,129
Int. Cl. B65d *41/28*
U.S. Cl. 222—499 **6 Claims**



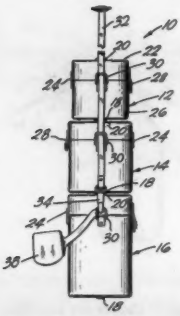
A dispensing cap construction comprising an orifice member attachable to a container, and a cap member movably mounted on the orifice member. The members have cooperable stopper and discharge passage portions. The stopper portion has at one point a side projection increasing its size. The cap member can have both a shallow, consumer seal position and a deep, factory seal position. For both said positions the stopper portion closes the cooperable discharge passage, whereas the passage is opened for a third or raised, dispensing position of the cap member. The deep position of the cap member effects a more secure seal of the passage,

and requires a greater applying force than that needed to attain only the shallow cap position, this being due to the increased size of the stopper portion effected by its side projection.

ERRATUM

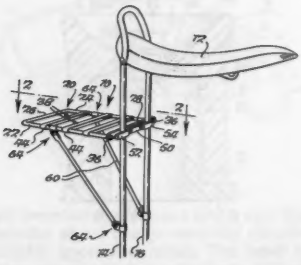
For Class 223—99 see:
Patent No. 3,572,580

3,572,560
PHOTOGRAPHY LUGGAGE
Charles L. Dolph, 3395 N. Maple, Ann Arbor, Mich.
Filed June 16, 1969, Ser. No. 833,651
Int. Cl. A45c *11/38*
U.S. Cl. 224—5V **9 Claims**



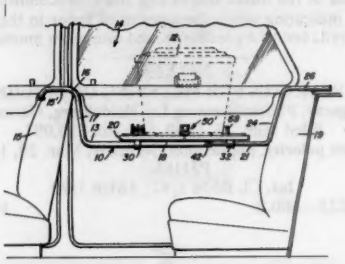
Gadget luggage for storing and carrying small articles to be used with photographic equipment. Individual containers for the articles are connected together in a relatively flexible vertical column and are adapted to be supported by a shoulder strap in an arrangement such that any container can be opened to make its contents readily available without removing it from the vertical column.

3,572,561
LUGGAGE CARRIER ACCESSORY
Herbert J. McCauley, 86 Dana Road, Buffalo, N.Y.
Filed May 19, 1969, Ser. No. 825,816
Int. Cl. B62j *7/04*
U.S. Cl. 224—32 **4 Claims**



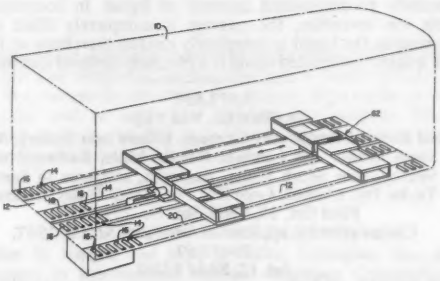
A luggage carrier accessory for attachment to a bicycle comprising a load support platform or frame having a series of crossmembers extending between and connected to the side portions of the frame. A mounting plate secures the load support frame to spaced vertical seat or saddle support struts mounted on the bicycle frame. Carrier rods are connected at one end of each to the side portions of the load support frame and at their other ends to the saddle support struts. The load support frame is vertically adjustable on the saddle support struts relative to the bicycle frame.

3,572,562
ADJUSTABLE CASKET SUPPORT FOR AUTOMOBILES
Jesse B. Floyd, Jr., 755 Yell Road, Lewisburg, Tenn.
Filed Oct. 31, 1968, Ser. No. 772,102
Int. Cl. B60r *11/00;* **B60p** *3/26*
U.S. Cl. 224—42.42 **3 Claims**



Supporting rails engage the forward and rearward seat of an automobile sedan. A base member is clamped to an intermediate portion of the rail members, the base member being adapted to support a small size casket thereon. The base member includes adjustable means for contacting the sides of a casket thereby inhibiting sliding motion of the casket during transport. Roller means are provided in the base member for reducing the effort required to slide the casket across the upper surface of the base member.

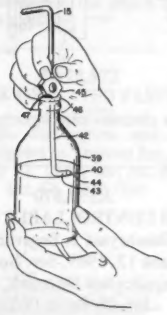
3,572,563
TRUCK UNLOADER
Emerson T. Oliver, Marblehead, Mass. (Essex Engineering & Mfg. Inc., Day St., Lynn, Mass.)
Filed Oct. 1, 1969, Ser. No. 862,886
Int. Cl. B60p *1/38*
U.S. Cl. 214—516 **14 Claims**



A loading and unloading apparatus for a freight-carrying vehicle having a low-friction bed to enable loads to be positioned along the length of the vehicle bed with ease. The device includes an unloading unit which is located forwardly of the load and is slidable along the length of the bed. When the vehicle is unloaded, the unloading unit is driven rearwardly to urge the loads toward the rear of the vehicle. The unloading unit is driven by an endless chain disposed beneath the vehicle bed for movement along a run that extends lengthwise of the bed. The chain and unloading unit are connected during normal loading operations and advance forwardly in unison to the forwardmost end of the bed. When the unloading unit has advanced to the forward end of the bed it automatically disengages the chain to permit continued forward advancement of the chain and loading of the vehicle. Loading is facilitated by a removable loading unit which is connected manually to the chain and which engages the rearward end of the load to advance the load forwardly in unison with the chain. Because the unloading unit disengages the

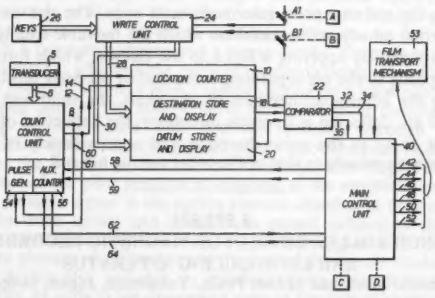
chain at its forwardmost position, the chain may be driven continually in a forward, loading direction to continue to load the vehicle. Additionally, the loading unit may be manually disengaged from and repositioned along the chain.

3,572,564
GLASS BOTTLE AND JUG CUTTER
Floyd L. Fleming, 2110 Southwest 173rd Place, Seattle, Wash.
Filed Oct. 23, 1968, Ser. No. 769,926
Int. Cl. B26f *3/00*
U.S. Cl. 225—2 **5 Claims**



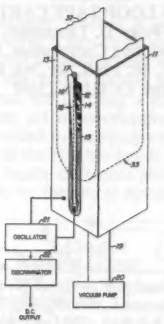
Apparatus for severing closed glass articles such as bottles and tubes employing a jig to hold a glass cutter wheel at the proper angle relative to the glass and to guide the cutter in scribing a shallow groove on the outside of a bottle. A hammer is inserted through the mouth of the bottle for tapping the glass opposite the groove on the outside of the bottle. The hammer has a stop engageable with the mouth of the bottle enabling it to be manipulated outside the bottle held fixed relative to the groove while tapping along the groove.

3,572,565
INFORMATION RETRIEVAL APPARATUS
Douglas L. Steggall, London, England, assignor to Selectro-Micro Company Limited, London, England
Filed Oct. 15, 1968, Ser. No. 767,608
Claims priority, application Great Britain, July 3, 1968, July 12, 1968, 31,671/68;33,307/68
Int. Cl. B65h *23/18*
U.S. Cl. 226—33 **7 Claims**



Information retrieval apparatus, particularly for locating a desired frame on a microfilm strip, comprises a photoelectric transducer for detecting the passage therepast of markers on the film strip, each marker being associated with a particular frame, a counter for counting the corresponding signals produced by the transducer, storage means for storing the serial number of a frame to be brought to a reading position, comparing means for continually comparing the count of the counter with the stored serial number, and means for arresting the film movement when the comparison shows equality. The storage means also includes means for storing the serial number of the frame initially in the reading position, this number being also fed into the counting means to provide a datum count. The apparatus also includes means for sensing that the desired frame is approaching the reading position and for slowing down the film so as to avoid overshoot when the film is finally arrested. The apparatus can drive the film in either direction to locate the desired frame and, when one desired frame has been located, a further desired frame can be located without having to rewind the film to a datum position.

3,572,566
WEB POSITION SENSOR
Robert M. Fraser, Lincoln, and Roger K. Lee, Watertown, Mass., assignors to Itek Corporation, Lexington, Mass.
Filed Feb. 19, 1969, Ser. No. 800,660
Int. Cl. B65h *25/02*
U.S. Cl. 226—45 **6 Claims**

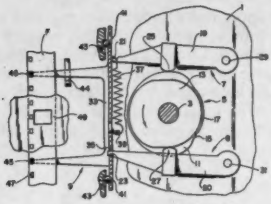


A vacuum box having a capacity transducer located in a slot in one of the sidewalls. The transducer consists of a conductive mesh, a porous dielectric material and a flexible metallic strip which at one end is biased away from the sidewall and fixed to the wall at the other end. As a web loop enters the box, a pressure differential is created by the web loop between the atmosphere above the loop and that below the loop. The vacuum below the loop acts upon that portion of the metallic strip below the loop bringing it close to or in contact with the porous dielectric and the conductive mesh thereby changing the capacitance of the transducer as a function of the length of the loop. The capacitor forms a portion of the tuned element of an oscillator, the frequency of which varies linearly with changes in the position of the loop.

3,572,567
CAM MECHANISM FOR THE FILM-ADVANCING SYSTEM IN A CINEMATOGRAPHIC DEVICE
Hermann Claar, Stuttgart-Wangen, Germany, assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Aug. 6, 1968, Ser. No. 750,518
Claims priority, application Germany, Aug. 12, 1967, K63088
Int. Cl. G03b *1/22*
U.S. Cl. 226—67 **2 Claims**

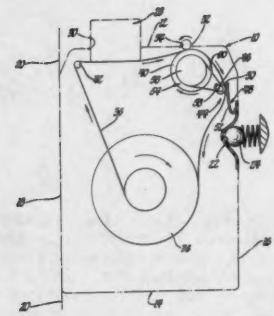
A mechanism for controlling the motion of a pulldown claw in a cinematographic device operates throughout its entire cycle under approximately constant torque requirements of the drive motor of the device. The mechanism includes

two opposed cam followers which ride on two cam surfaces respectively of a cam means. Each cam surface and follower has a particular shape and orientation relative to the other



cam surface and follower such that the torque required to drive the pulldown claw remains approximately constant throughout each 360° of rotation of the cam.

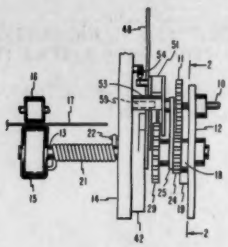
3,572,568
ENDLESS LOOP TAPE CARTRIDGE
Phillip A. Lutz, and Peter D. Lintzenich, Kokomo, Ind., assignors to General Motors Corporation, Detroit, Mich.
Filed Mar. 10, 1969, Ser. No. 805,571
Int. Cl. G11b *23/04*
U.S. Cl. 226—108 **1 Claim**



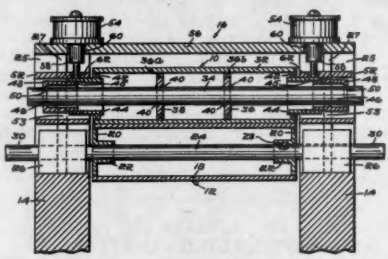
A magnetic tape cartridge includes an internal pressure roller cooperating with an external drive roller so as to drive an endless loop of tape therebetween. A takeup apparatus is located within the tape cartridge to prevent the accumulation of slack tape in the area surrounding the pressure roller. The takeup apparatus comprises an auxiliary drive roller which cooperates with a bearing device so as to tension the tape as it leaves the pressure roller.

3,572,569
DOCUMENT FEED AND CONTROL DEVICE
Raymond L. Cimijotti, Chatfield, and Robert F. Markley, Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed June 2, 1969, Ser. No. 829,407
Int. Cl. B65l *17/22*
U.S. Cl. 226—141 **9 Claims**

A document control device which utilizes a single mode of input drive to affect any of a selected plurality of modes of document feed output. A modified ratchet wheel on the output shaft is driven in various modes by a drive element variously directed by a channel cam structure during a fixed arcuate drive cycle.



3,572,570
ROLL WITH CONTROLLABLE DEFLECTION
Peder Mortensen, Skoobrynet 1, Bagsvard, Denmark
Filed June 12, 1969, Ser. No. 839,145
Claims priority, application Denmark, Aug. 2, 1968, 3736
Int. Cl. B65h *17/20*
U.S. Cl. 226—177 **4 Claims**

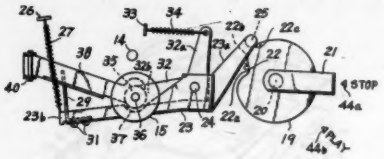


Apparatus for controlling the deflection of a tubular nip roll. The roll is supported internally at its ends by annular bearings which are in turn carried by sleeves. A nonrotatable shaft extends axially through the roll and the sleeves, the shaft having at least one additional bearing radially supporting the roll at a point intermediate its ends. The sleeves are carried on adjustable members which are movable axially on the shaft. By applying a force to the sleeves, which force is opposite to the nip separating force and by properly positioning the adjustable members on the shaft, the shaft and the roll are deflected in opposite directions, the deflection of the roll being in the same direction and approximately of the same magnitude as that of the other mating nip roll.

3,572,571
PINCH ROLLER DEVICE FOR MAGNETIC RECORDING AND REPRODUCING APPARATUS
Kenichi Mori, and Mitsuo Iwata, Yokohama, Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan
Filed Sept. 17, 1969, Ser. No. 858,769
Claims priority, application Japan, Sept. 20, 1968, Apr. 26, 1969, 43/67664;44/37752
Int. Cl. B65h *17/22*
U.S. Cl. 226—176 **9 Claims**

In a magnetic recording and reproducing apparatus, a

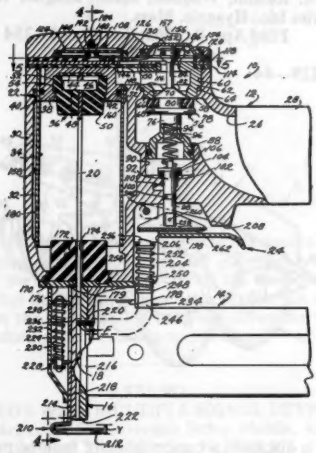
pinch roller device which moves a pinch roller downwardly lower than a determined height of a travelling path of a magnetic tape simultaneously as the pinch roller is disengaged and separated from a capstan.



3,572,572
FLUID PRESSURE OPERATED FASTENER DRIVING DEVICE

Peter A. Readyhough, Barrington, and Walter G. Lemos, Riverside, R.I., assignors to Textron Inc., Providence, R.I.

Filed July 22, 1969, Ser. No. 843,665
Int. Cl. B27f *7/06*
U.S. Cl. 227—8 **16 Claims**

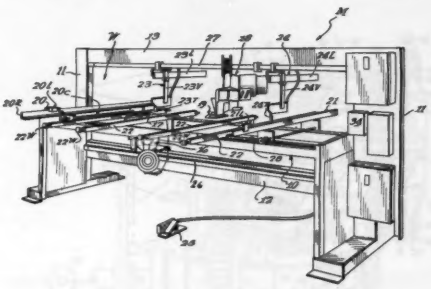


A fastener driving device having a fluid pressure operated system for moving a fastener driving element through repeated cycles each of which includes a drive stroke during which a fastener is driven and a return stroke, the main control valve for effecting the cycle of operation being moved by pilot pressure within a pilot chamber acting on a pilot piston forming part of the main control valve, the pilot chamber being communicated with reservoir pressure through a restricted orifice and the exhaust of the pilot chamber being under the control of an auto-fire valve operable to prevent exhaust of the pilot pressure in response to the establishment of a pressure signal in the return plenum chamber at the end of the drive stroke and operable to permit exhaust of the pilot pressure in response to a low pressure signal from the return plenum chamber toward the end of the return stroke. The device also includes an interlock lever pivoted intermediate its ends to the depending stem of the actuating valve and having its ends connected respectively to the trigger member and a motion transmitting member, which, in turn, is connected through a spring to the work contacting member so as to prevent undesired movement of the actuating valve into its closed position as a result of recoil movement of the device when the fastener driving element completes its drive stroke.

3,572,573
DOUBLE SIDE SEAMER

Bernard P. Kunka, Racine, Wis., assignor to Interlake Steel Corporation, Chicago, Ill.

Filed Nov. 17, 1969, Ser. No. 877,065
Int. Cl. B25c *7/00*
U.S. Cl. 227—150 **9 Claims**

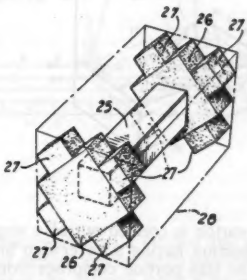


A double side seamer stitches a pair of mating carton blanks together to form a two-piece carton in a single pass. The seamer frame has a pass-through window provided with guides to support the folded carton blanks in side-by-side edge lapping relation for defining a top set of overlapping edges and a bottom set of overlapping edges. A separate stitcher head is provided for seaming each set of edges and a timer is connected to the stitcher heads to synchronize initiation of the stitcher heads after each stitch cycle and thereby enable both seams to be formed at the same time.

3,572,574
PACKAGING

Thomas W. Mears, Wilmslow, England, assignor to Evans Bellhouse Limited, Manchester, Lancashire, England

Filed Feb. 24, 1969, Ser. No. 801,716
Int. Cl. B65d *5/50, 85/30, 81/04*
U.S. Cl. 229—14 **6 Claims**



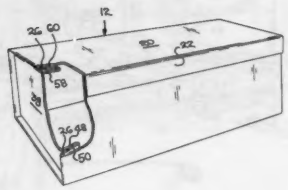
Cushioning unit for use inside a packing box includes a hollow carrier, such as a tube or box, for accommodating the article to be packed, and pieces of resilient material, such as foamed plastic, secured to exterior of the carrier and adapted to engage the inner surfaces of the box walls. Resilient pieces may include a main rectangular pad secured to each end of carrier, and auxiliary pads secured to center of each side of main pad, only the edges of the pads engaging the packing box walls. Alternatively, each main rectangular pad may have spaced pads secured to its sides, spaced pads making face-to-face contact with packing box walls. Resilient buffer may be secured to inner surface of each packing box end wall.

3,572,575

SELF-LOCKING PAPERBOARD SHIPPING CONTAINER

Gus John Dorofachuk, Willingboro, N.J., assignor to Owens Illinois, Inc.

Filed Apr. 18, 1969, Ser. No. 817,332
Int. Cl. B65d *13/00, 5/02*
U.S. Cl. 229—23 7 Claims



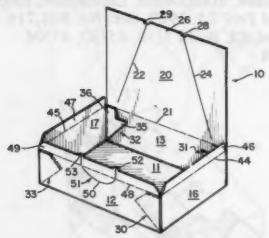
A self-locking folded paperboard shipping container including interlocking body and end portions wherein the end panels are formed with reversely bent flaps on each side forming an interlocking V to engage inturned portions on said body when said end panels are inserted into the body through an open top flap and pushed into position to close the ends and form a rigid interlocked structure.

3,572,576

FROZEN FOOD CARTON

Thomas W. Foster, Palo Alto, Calif., assignor to Fibreboard Corporation, San Francisco, Calif.

Filed May 14, 1969, Ser. No. 824,512
Int. Cl. B65d *5/22, 5/24*
U.S. Cl. 229—31 12 Claims



A frozen food carton is erected out of a single blank to comprise a tray portion having a cover flap hingedly connected thereto. The tray portion comprises front, back and sidewalls attached together by corner gusset folds and a narrow flap hingedly connected to the top edges of the front and side panels. The cover flap, hingedly connected to the back panel and having opening means formed therein, is adhesively secured over the three narrow flaps to form a tightly sealed carton closure.

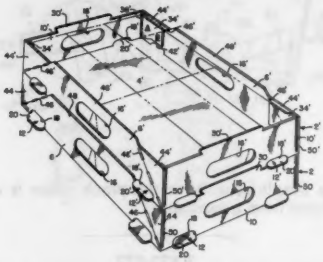
3,572,577

VENTILATED TRAY

Martin S. Dorfman, West Englewood, N.J., assignor to Grand-City Container Corporation, North Bergen, N.J.

Filed Dec. 29, 1969, Ser. No. 888,216
Int. Cl. B65d *5/26*
U.S. Cl. 229—32 10 Claims

A tray for supporting products which require ventilation is formed from a single piece blank of paperboard and includes a bottom wall, two sidewalls and two end walls. Ventilation slots in the sidewalls and in the end walls of the tray are formed by punching out curvilinear tabs along cut scorelines. The outwardly extending tabs serve to prevent lateral and longitudinal skidding between stacked trays and also provide for convenient nesting. The ventilated tray is easily collapsed so that it can be shipped substantially flat when empty.

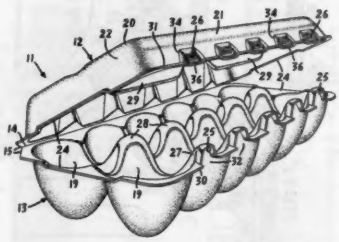


3,572,578

CARTON LATCH CONSTRUCTION

Howard A. Rohdin, Waquoit, Mass., assignor to Packaging Industries Inc., Hyannis, Mass.

Filed Apr. 8, 1969, Ser. No. 814,254
Int. Cl. B65d *45/00*
U.S. Cl. 229—44 4 Claims



There is disclosed a carton made of foamed polystyrene or like material comprising a top portion and a bottom portion hinged along one side and releasably fastened along the other side by a plurality of latching means. An edge of the bottom portion of the carton having cells for receiving eggs or the like, is molded with a plurality of vertical protrusions along it, each protrusion having an outwardly projecting hook at its upper end. The hook is disposed inwardly of the carton edge and a cutout is made in the edge below the hook. Catches are molded in the corresponding edge of the carton lid, including inwardly extending detents to engage the hooks firmly when closed, and downwardly extending lips to engage the cutouts in the bottom portion edge. The latch means do not extend beyond the edges of the carton and effectively resist accidental opening when twisted.

3,572,579

SCORED PERIPHERAL TEAR STRIP WITH RECLOSURE LID

David Charles Mueller, Neenah, Wis., and Peter Floyd Niesen, Mound, Minn., assignors to American Can Company, New York, N.Y.

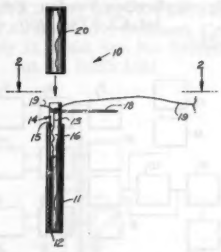
Filed Apr. 11, 1969, Ser. No. 815,416
Int. Cl. B65d *17/24*
U.S. Cl. 229—51 5 Claims

A thermoplastic container and lid are heat-sealed together through clamping jaws. During the sealing operation a pair of offset scores are applied to flanges on the container and lid, which are heat-sealed. The scores facilitate severance of the

sealed flanges for opening the container. Offset knives heated by the clamping jaws form the offset scores and leave a tab

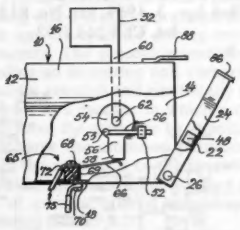
on the lid by which the lid may be readily removed and replaced subsequently when desired.

3,572,580
NEEDLE THREADING DEVICE
Mike V. Kasper, 460 E.255, Euclid, Ohio
Filed Aug. 11, 1969, Ser. No. 848,827
Int. Cl. A41h *31/00*
U.S. Cl. 223—99 **5 Claims**



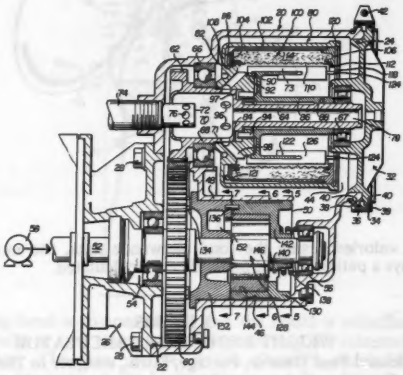
A needle threader composed of a cartridgelike member having an extending hook portion for insertion into the eye of a needle, the hook portion receiving the thread which will then be pulled through the eye of the needle. An extending portion from the cartridgelike member allows the needle to be steadied during the threading operation.

3,572,581
MAILBOX WITH MULTIPLE SIGNAL DEVICES
Donald H. McLeod, 2508 Riverside Drive, Mobile, Ala.
Filed Sept. 23, 1969, Ser. No. 860,376
Int. Cl. A47g *29/12*
U.S. Cl. 232—35 **10 Claims**



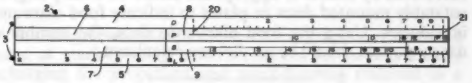
A rural-type mailbox has two flags pivotally mounted at opposite sides of the box. Inside the box are slidable rods engageable with spring fingers on the pivotable door of the box. The rods are operatively connected to the flags by rotatable discs for holding one flag elevated and the other flag lowered when the door is closed and the rods are engaged with the spring fingers. A switch in the box is disposed for contact by a radial extension of one disc when the other flag is raised upon opening the door. A signal device such as a lamp or bell is connected in circuit with the switch to operate when the door is opened to raise the lowered other flag.

3,572,582
CENTRIFUGE
Harold Douglas Seielstad, Jr., Birmingham, Mich., assignor to Midwest Aero Industries Corporation, Royal Oak, Mich.
Filed Mar. 21, 1969, Ser. No. 809,113
Int. Cl. B04b *3/00*
U.S. Cl. 233—2 **13 Claims**



A centrifuge for separating contaminants from a liquid, such as lubricating oil. The centrifuge includes a rotating cylindrical sleeve assembly open at one end and provided with a readily removable and replaceable annular particle receiving and entrapping sleeve. The centrifuge includes a positive displacement-type pump operable to discharge decontaminated fluid from the centrifuge at a rate at least equal to the rate at which contaminated fluid is fed into the centrifuge, to thereby achieve nonflooded operation and to permit the separation of entrained air from the lubricant.

3,572,583
SLIDE RULE FOR MAKING PATTERNS
Joseph E. Hannon, 943 W. Greenbriar Lane, Dallas, Tex.
Filed Oct. 28, 1968, Ser. No. 771,187
Int. Cl. G06g *1/02*
U.S. Cl. 235—70 **6 Claims**

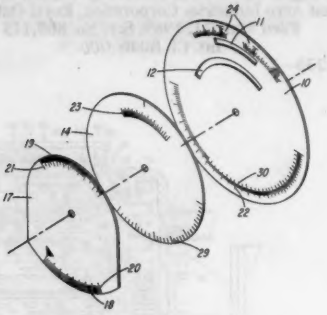


This disclosure provides a method and a tool for simplifying the art of pattern making while simultaneously increasing the accuracy of the patterns made. One embodiment of this tool is a slide rule (known as a "pattern rule") so constructed as to directly compute and display the dimensions required in a pattern layout. By inserting the known dimensions and requirements into one area of the pattern rule by physically moving a sliding rule member, the desired dimensions are displayed in another area of the rule.

3,572,584
WEIGHT REDUCTION CALCULATOR
Richard Paul Weaver, 1413 Dogwood Dr., Portage, Mich., and Talivaldis Cepuritis, 2348 Tipperary Road, Kalamazoo, Mich.
Filed Oct. 1, 1968, Ser. No. 764,162
Int. Cl. G06c *3/00*
U.S. Cl. 235—88 **1 Claim**

Age, weight, height, and physical activity of a patient are

correlated by means of appropriate scales on axially aligned, rotatably mounted discs or plates to indicate food allowance



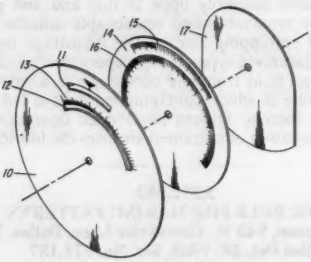
in calories. Using the food allowance data, the number of days a patient should be on diet are calculated.

3,572,585

WEIGHT REDUCTION CALCULATOR

Richard Paul Weaver, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Oct. 1, 1968, Ser. No. 764,141
Int. Cl. G06c *3/00*
U.S. Cl. 235—88 **1 Claim**



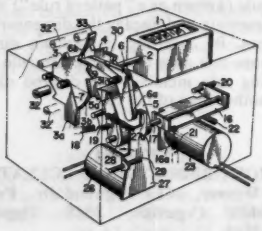
Age, weight, height, and physical activity of a patient are correlated by means of appropriate scales on axially aligned, rotatably mounted discs or plates to indicate food allowance in calories. Using the food allowance data, the number of days a patient should be on diet are calculated.

3,572,586

CALCULATING DEVICE FOR A DUPLICATOR

Shigeru Suzuki, Yokohama-shi, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed Mar. 28, 1968, Ser. No. 716,951
Int. Cl. G06m *1/00*; G06f *15/18*
U.S. Cl. 235—91 **5 Claims**



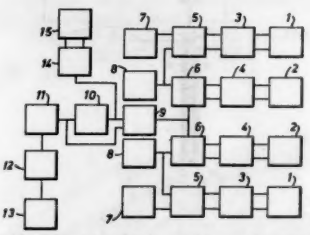
A calculating device for a duplicator comprises a first driving ratchet wheel fixed to a shaft of a calculating meter and a second ratchet wheel loosely mounted on the shaft. The second ratchet wheel is urged by a spring to an initial predetermined position and a pawl is positioned adjacent the ratchet wheels to drive them each time a copy of an original is made by the duplicator. Each time the pawl is driven, each of the ratchet wheels is rotated through one tooth. The second ratchet wheel has a protruded toothless portion to engage the pawl after a predetermined rotation of the second ratchet wheel in order to prevent engagement of the pawl with the driving ratchet wheel. Consequently the calculating meter will only indicate the number of copies made up to a predetermined number. A retaining pawl engages the second ratchet wheel to prevent return thereof to its original position until an original to be copied is replaced in the duplicator by another original.

3,572,587

BURNER CONTROL APPARATUS

Jerk Gunnar Oldenburg, Genarp; Sten Bengt Ove Wilhelmsson, Vintrie, and Krister Kurt Olle Lennervad, Skivarp, Sweden, assignors to Kockums Mekaniska Verkstads Aktiebolag, Malmo, Sweden

Filed Feb. 11, 1969, Ser. No. 798,323
Claims priority, application Sweden, Feb. 12, 1968, 1785/68
Int. Cl. F23n *1/00*
U.S. Cl. 236—26 **8 Claims**



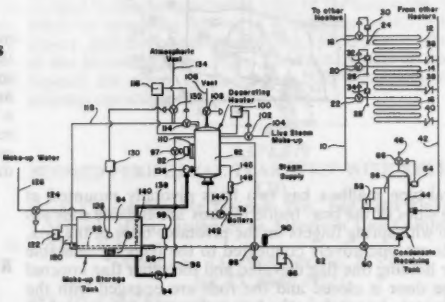
An apparatus for controlling the steam production of preferably ship steam boilers comprising transmitters for providing signals corresponding to air pressure, fuel oil pressure and steam pressure and controlling the operation of the burners of the boilers via a time integrating circuit, an adding circuit, comparators and drive circuits controlling servomotors for dampers and fuel oil valves and for igniting and extinguishing at least most of said burners.

3,572,588

CONDENSATE AND HEAT RECOVERY SYSTEM

John S. Hamilton, Jr., Monroe, La., assignor to Boiler Equipment and Controls, Inc., Monroe, La.

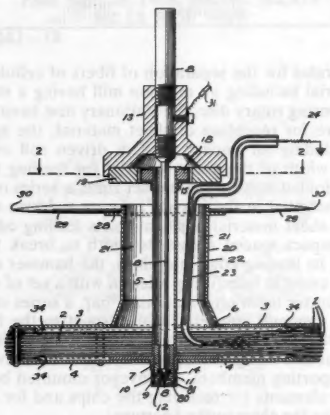
Filed Apr. 3, 1969, Ser. No. 813,161
Int. Cl. F24d *1/02*
U.S. Cl. 237—9 **23 Claims**



A trapless condensate and heat recovery system is provided for use with a plurality of parallel connected steam

heating coils, each of which is provided with an individual temperature control valve at its inlet side. The coils are connected without the use of traps to a common condensate recovery tank which is provided with pressure and level controls. In one embodiment, the tank is provided with a vent orifice sized to provide adequate venting of noncondensible gases. Alternatively, the tank may be provided with pressure responsive means to bleed off flash steam to a point in a condensate return line from the tank. The condensate return line is coupled either to a deaerating heater or to a makeup storage tank depending on the temperature of the condensate in the line. Live makeup steam is fed into the deaerating heater in response to the pressure within the heater, and excess flash steam within the heater is automatically transferred to the makeup storage tank in response to excess pressure within the heater. In the event that the temperature within the makeup storage tank is excessive, temperature control means responsive to the temperature within the makeup storage tank is employed for controlling an atmospheric vent coupled to the excess steam line to the makeup storage tank. The deaerating heater is provided with level controls to control the feed of water to and from the makeup storage tank.

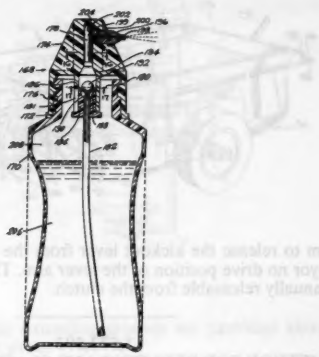
3,572,589
ELECTROSTATICALLY DRIVEN DISTRIBUTOR
Edward O. Norris, P.O. Box 4157, Westport, Conn.
Filed July 31, 1968, Ser. No. 749,164
Int. Cl. B05b *5/04*
U.S. Cl. 239—15 **17 Claims**



This disclosure relates generally to rotary atomizers of the type used in painting and coating operations, and more particularly to simple and inexpensive driving mechanisms for rotating such atomizers. The present invention is embodied in apparatus including an atomizing unit comprising a rotary atomizer mechanically coupled and electrically connected to an electrostatic motor in a manner in which a common high voltage charge will drive the atomizer to atomize the coating material and will charge the atomized particles. In one advantageous form of the apparatus of the invention, the electrostatic motor and the atomizer are integrated as a common unit in the form of curved, hollow horn-shaped members mounted on a common sleeve.

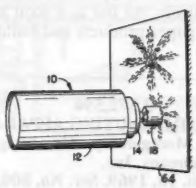
3,572,590
SQUEEZE BOTTLE ATOMIZERS AND LIQUID DISPENSERS
Carl E. Malone, Fort Lauderdale, Fla., assignor to The AFA Corporation, Miami, Dade County, Fla.
Filed May 31, 1968, Ser. No. 733,356
Int. Cl. B65d *1/32*
U.S. Cl. 239—327 **17 Claims**

A squeeze bottle atomizer having an atomizing head in which an airstream impinges on a column of liquid in a siphon tube to partially nebulize the liquid. The partially nebulized liquid is then carried by the airstream through a mixing chamber and a restricted orifice or a wick saturated with liquid and an orifice to further nebulize the liquid. The



atomizing head is so constructed that the liquid is nebulized sequentially in two stages, thereby producing an extremely fine spray. The size of the orifice through which the airstream impinges on the liquid column can be adjusted to vary the fineness of the nebulized liquid.

3,572,591
AEROSOL POWDER MARKING DEVICE
Richard J. Brown, Yonkers, N.Y., assignor to Precision Valve Corporation, Yonkers, N.Y.
Filed Feb. 24, 1969, Ser. No. 801,569
Int. Cl. B05b *7/32*
U.S. Cl. 239—337 **7 Claims**



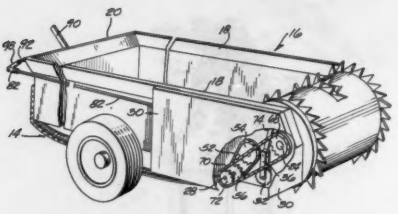
A marking device comprising a valved propellant source, a source of mark-forming material, means for simultaneously discharging the propellant and mark-forming material to a pattern-forming member. The pattern-forming member has a flat upper end having one or more (usually a plurality) grooves. The grooves extend from the opening in the conduit to a venting zone, thereby producing a passageway or series of passageways for discharging propellant and mark-forming material to the surface to be marked.

To form a mark, the flat outer end of the pattern-forming member is impressed against the surface with sufficient force to activate the means for discharging the propellant and the mark-forming material.

3,572,592
DRIVE ARRANGEMENT
Richard A. Jankowski, West Bend, Wis., assignor to Kasten Manufacturing Corporation, Allenton, Wis.
Filed Mar. 5, 1969, Ser. No. 804,489
Int. Cl. A01c *19/00;* **E01c** *19/20*
U.S. Cl. 239—680 **13 Claims**

Disclosed herein is a control assembly for a manure spreader having a beater drum driven by a clutch and an apron conveyor driven by a step by step ratchet drive, the assembly including a selectively positionable lever arm to control the motion of the ratchet drive, a clutch control rod connected to the lever arm and the clutch to disengage the

clutch when the apron conveyor is operating at high speed, a kickout lever to prevent reengagement of the clutch when disengaged by the clutch control rod, and a cam on the lever



arm to release the kickout lever from the clutch at the conveyor no drive position of the lever arm. The kickout lever is manually releasable from the clutch.

3,572,593

METHOD FOR REDUCING AND CLASSIFYING SUGAR CANE BAGASSE

Peter V. Guarisco, Morgan City, La., assignor to Silver Lining, Inc., Morgan City, La.

Filed Feb. 28, 1969, Ser. No. 804,057
Int. Cl. B02c *19/00*
U.S. Cl. 241—24 **5 Claims**

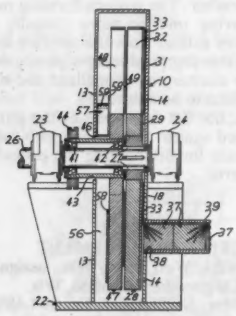
Sugar cane bagasse in a dry state is reduced only to the extent that substantially all of the particles thereof are capable of passing through a sieve in the 5-mesh to 15-mesh range and then classified into a finer fraction of reduced crude fiber and high nutrient content containing all particles of a size within the range of from 30-mesh to 50-mesh and smaller and a coarser fraction of high crude fiber content containing all particles larger than those of the finer fraction. In this way, substantially the whole of the bagasse is usable, with minimum waste, as two separate fractions that are especially suited, respectively, for use as a food additive and as a basic ingredient for paper products and building and insulating materials.

3,572,594

WOOD COMMINUTING APPARATUS

Royce G. Kershaw, Montgomery, Ala., assignor to Kershaw Manufacturing Company, Inc.

Filed Feb. 18, 1969, Ser. No. 800,101
Int. Cl. B02c *18/06*
U.S. Cl. 241—55 **10 Claims**



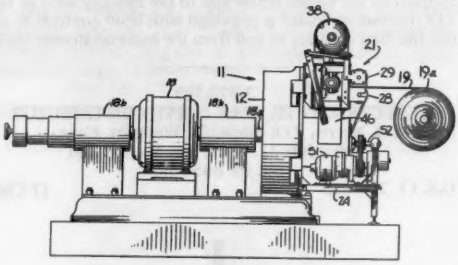
Wood comminuting apparatus having adjacent discs rotatable in opposite directions in a housing with blades at one side of one disc positioned to contact a length of wood fed sidewise thereagainst. Openings adjacent blades on the one disc convey cut wood therethrough to adjacent side of other disc. Other disc rotates at greater speed than the one disc and in opposite direction. Cutters on other disc comminute wood which then passes through openings in other disc. Impellers at other side of the other disc discharge comminuted wood from housing.

3,572,595

ATTRITION MILL

Charles R. Lyon, Fort Mill, S.C., assignor to Celanese Corporation

Original application Mar. 2, 1965, Ser. No. 436,579, now Patent No. 3,406,916, dated Oct. 22, 1968. Divided and this application June 26, 1967, Ser. No. 664,578
Int. Cl. B02c *7/06, 13/06, 21/00*
U.S. Cl. 241—152 **5 Claims**



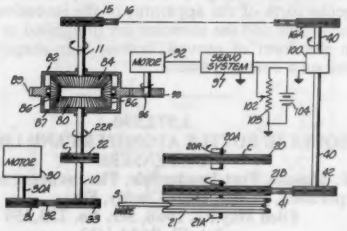
An apparatus for the separation of fibers of cellulose pulp sheet material including an attrition mill having a stationary and an opposing rotary disc, the stationary disc having a central aperture for reception of sheet material, the apparatus further including an impact zone, a driven roll extending across the width of the sheet material for feeding the pulp sheet in unfolded state to the impact zone, a series of spaced hammers mounted in the impact zone on a driven shaft for hitting the sheet material adjacent to its leading edge, with repeated impact spaced across its width to break the pulp material at its leading edge into chips, the hammer elements adapted to coact in interfitting relation with a set of stationary spaced cutter teeth on a stationary bar, a series of spaced supporting elements staggered with respect to the hammers for supporting the sheet material adjacent to its leading edge, the construction being such that the chips fall between the spaced supporting members, a conveyor mounted below the supporting elements for receiving the chips and for continuously feeding the chips to the aperture.

3,572,596

CABLE STRESSING AND WINDING APPARATUS

Maximiliaan J. Dykmans, 4434 Mayapan Dr., La Mesa, Calif.

Filed Apr. 2, 1968, Ser. No. 718,138
Int. Cl. B21f *17/00*
U.S. Cl. 242—7.21 **20 Claims**



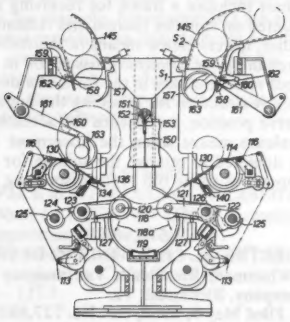
In wrapping wire around a concrete tank to prestress the same a motor-driven carriage travels around the tank with a

sprocket wheel engaging a chain that extends around the tank. Simultaneously, the wire is fed from a supply spool onto a wire gripping drum and is then laid on the outer tank wall with a wire tension established by monitoring deviations in stress with respect to a nominal value of stress and using such deviations to produce changes in the difference in peripheral lineal speed between the sprocket wheel (carriage speed) and the gripping drum such that such stress is maintained substantially constant at said nominal value whereby the wire is uniformly and accurately stressed when and as it is being wrapped around the tank wall. The carriage is supported on a tower having wheels engaging both the ground and the tank wall so that wire may be supplied from a point on the machine within or outside the tank. In one form a differential gear system is used. In another form a pair of hydraulic motors is used with one of such motors operating as a pump for the other motor. In another form a variable gear drive is provided between the sprocket wheel and gripping drum. In another form a force is applied to a stressing block acting on the wire in accordance with the stress in the wire. In another form the effective diameter of a gripping drum is changed in accordance with stress in the wire.

3,572,597
TEXTILE MACHINES

Walter Parker, Wilmslow; Harold William Lee, Poynton, and Alan Herbert Evans, Bramhall, England, assignors to Ernest Scragg & Sons Limited, Macclesfield, Cheshire, England

Filed Sept. 25, 1968, Ser. No. 762,419
Int. Cl. B65h *54/06*
U.S. Cl. 242—18 **10 Claims**



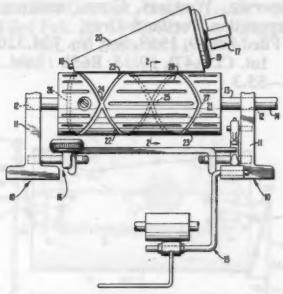
A doffing mechanism of a textile machine in which prior to severing the yarn a full spool is released from the yarn-winding position to fall on to auxiliary drive rolls and is then supported and rotated by auxiliary drive rolls so that the full spool continues to take up yarn until an empty spool is delivered to the winding position and is ready to take up yarn, whereafter the yarn is severed to commence winding on of yarn on the empty spool and the auxiliary drive rolls are moved to lower the full spool on to a delivery conveyor arranged below these rolls.

3,572,598
FRICTION-DRIVING DRUM

Julian B. Chavis, P.O. Box 939, Gastonia, N.C.

Filed May 28, 1968, Ser. No. 732,590
Int. Cl. B65h *54/48*
U.S. Cl. 242—43.2 **5 Claims**

The cam used in quick traverse type winders has one or more turns of spiral grooves that run in opposite directions and cross one another at one or more points on opposite edges of a diametral plane. This cam is also a friction-driving drum for rotating a core or package on which a strand is being wound. These drums are molded from a thermosetting material such as Bakelite or Formica. For winding fine yarns

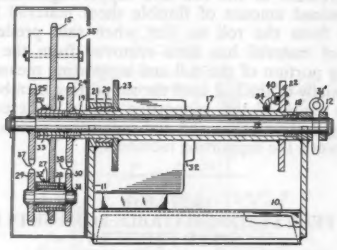


spaced apart, axially extending grooves are provided about the periphery of the drum.

3,572,599
WINCH

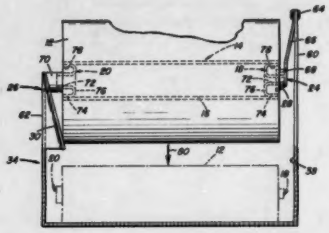
Elwyn P. Hilmer, 3028 Valmont Ave., Boulder, Colo.

Filed Apr. 14, 1969, Ser. No. 815,932
Int. Cl. B65h *75/00*
U.S. Cl. 242—54 **7 Claims**



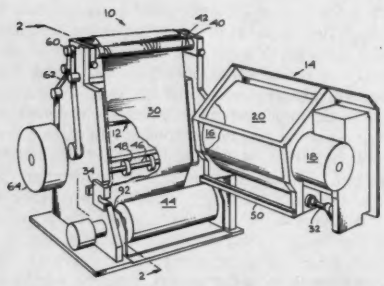
This disclosure describes the preferred embodiment of a speed reducer and winch combination made up of spaced support members each having a bearing on it, a hollow shaft rotatably supported in one bearing and a solid shaft extending through the hollow shaft and rotatably received in the other bearing, a first sprocket is supported on the solid shaft and a second sprocket is supported on the hollow shaft, a large sprocket is rotatably supported on the solid shaft between the first sprocket and second sprocket, a third shaft is supported on the large sprocket offset from its center and swung by it around the first and second sprocket, two small sprockets are supported on the third shaft. In the embodiment disclosed, sprockets and chains connecting the sprockets providing an epicyclic train are shown. However, the speed reducer can be used as a winch by providing flanges on the hollow shaft thereby making a spool. A sprocket may be used as a driver for the planet. This sprocket, as well as the other sprockets, could be V-belts and sheaves, timing belts and sheaves, or gears. Cable free reel-out is provided by a pull pin that when pulled will allow the stationary sprocket to rotate, which in turn rotates the planet sprocket freely. By the arrangement, equal slack in the two chains or equal center distance is achieved between the planet sprockets and the sprockets that are supported on the central shafts all of which are different size sprockets and the chains being of different lengths. The winch may be driven by any rotating power means.

3,572,600
DISPENSER FOR ROLLS OF FLEXIBLE SHEET MATERIAL HAVING STRUCTURALLY RIGID INTERNAL SUPPORTING MEANS
Paul W. Jespersen, Westport, Conn., assignor to Georgia-Pacific Corporation, Portland, Oreg.
Filed Feb. 9, 1968, Ser. No. 704,320
Int. Cl. A47k 10/38; B65h 19/04
U.S. Cl. 242—55.3 17 Claims



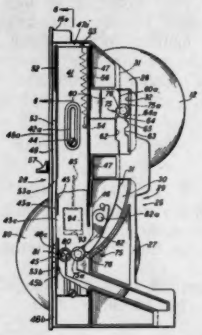
A device for dispensing a roll of flexible sheet material, which roll has structurally rigid internal supporting means extending axially outwardly beyond the ends of the roll, comprising; a framework including a pair of substantially horizontally opposed supporting members for rotatably engaging the ends of the supporting means, the supporting members being disengageable from the ends of the supporting means upon movement of the roll and supporting means axially of the roll, and means associated with the framework for preventing axial movement of the roll and supporting means until a predetermined amount of flexible sheet material has been removed from the roll so that when said predetermined amount of material has been removed from the roll, the remaining portion of the roll and supporting means may be moved axially of the roll until the supporting members disengage the ends of the supporting means, whereupon the remaining portion of the roll and supporting means gravitate from between the supporting members.

3,572,601
WEB FEED SYSTEM SUITABLE FOR USE IN HIGH-SPEED PRINTERS
Richard H. Miller, Chatsworth, Calif., assignor to Data Products Corporation, Culver City, Calif.
Filed Apr. 14, 1969, Ser. No. 815,654
Int. Cl. B65h 75/00
U.S. Cl. 242—55 7 Claims



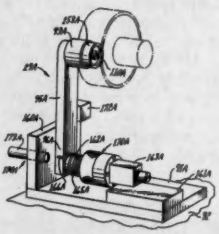
A web feed system suitable for feeding multipart paper in high-speed printers. The system utilizes a driving roller and a driven roller which together pull paper from a supply roll mounted in a paper supply buffer system. The ends of the driving and driven rollers are enlarged so that a driving force can be coupled directly therebetween rather than through the paper passing between the rollers. Reverse spiral grooves are formed in the roller surfaces to properly center and horizontally tension the paper as well as cause perfect tracking. The paper supply buffer system provides a means of supplying paper from a large roll without imposing the massive inertia of the roll into the paper-driving system.

3,572,602
TISSUE ROLL DISPENSER
Ralph B. Mott, Sr.; Ralph B. Mott, Jr., and Robert L. Woods, Houston, Tex., assignors to Reserv-A-Roll Co.
Filed June 26, 1968, Ser. No. 740,337
Int. Cl. A47k 10/22; B65h 19/04
U.S. Cl. 242—55.3 4 Claims



The dispenser includes a frame for receiving a pair of tissue rolls mounted on spindles therein and retaining same one above the other, lower release means in the form of a movable ring for retaining the lowermost tissue roll in a dispensing position, upper release means in the form of a double tab and intermediate slot structure for retaining the uppermost tissue roll in a reserve position, and means for actuating the lower and upper release means when the lowermost tissue roll is substantially depleted to remove the spindle for same and to lower the uppermost tissue roll to the dispensing position.

3,572,603
ELECTRICAL COIL WINDING DEVICE
Benton A. Whiteman, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.
Filed May 9, 1968, Ser. No. 727,881
Int. Cl. B65h 39/16
U.S. Cl. 242—56.1 7 Claims



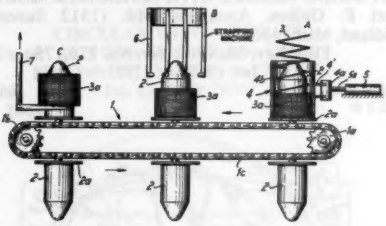
A conductive strip is wound onto a rotated coil while a roller presses the periphery of the coil to prevent a buildup of material along an edge of the coil. The roller is rotatably carried adjacent to the free end of a pivoted arm and constantly biased into engagement with the coil. One end portion of the roller has a reduced diameter portion to accommodate an electrical lead for application to the coil.

3,572,604

CONVEYOR DEVICE FOR COILING AND TYING WIRE

Erich Reth, and Karl Rebuschat, Duisburg, Germany, assignors to Demag Aktiengesellschaft, Duisburg, Germany

Filed Mar. 26, 1969, Ser. No. 810,642
Claims priority, application Germany, May 18, 1968, P 17 61 434.5
Int. Cl. B21c 47/24
U.S. Cl. 242—79 17 Claims



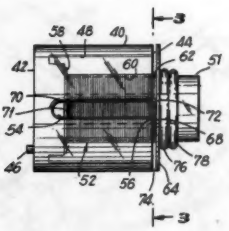
Auxiliary equipment for use in a metallurgical plant following a rolling mill for handling rolled material in wire or strip form comprises a conveyor having a plurality of winding arbors thereon at spaced locations therealong. The conveyor is movable successively into association with equipment at a plurality of different stations. The equipment at a first station comprises means for effecting the winding of the wire over the arbor and includes means for positioning a surrounding shell around the arbor to aid in winding a vertical stack of successive coils of wire thereon. This station may also include means, for example; for surrounding the arbor with two half shell plates providing an outside guide for the wire coils. A second section advantageously includes means for strapping the vertical stack which is formed at the first station and tying the stacks into secure bundles by encircling them with wire for example.

3,572,605

WIRE PACKAGE INCLUDING ENCASED SPOOL

Raymond Abbott De Forest, New City, N.Y., assignor to Secon Metals Corporation, White Plains, N.Y.

Filed Sept. 12, 1969, Ser. No. 857,481
Int. Cl. B65h 49/18
U.S. Cl. 242—137.1 7 Claims



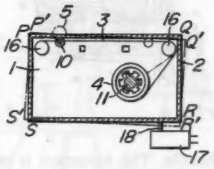
A spool of wire is encased in a cylindrical casing provided with an axially aligned slot for dispensing the wire. The spool has an outer flange with a diameter corresponding to the outer diameter of the casing so that a portion of the flange is juxtaposed to an end of the slot. The free end of the wire is detachably connected to said portion by a piece of masking tape or the like. A post in the casing supports the spool and O-rings on the post to prevent movement of the spool from the casing.

3,572,606

DEVICE FOR CONTROLLING TAPE DRIVE IN TAPE RECORDER OF MAGAZINE TYPE

Kozo Yamamoto, Hirakata-shi, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 26, 1968, Ser. No. 708,284
Int. Cl. B65h 59/38, 63/00
U.S. Cl. 242—190 4 Claims



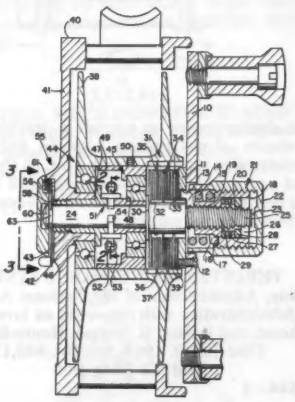
A magazine having means for effecting the drive control for a magnetic tape contained therein. The drive control means is actuated by the tension imparted to the tape at the end of tape supply thereby to stop the movement of or reverse the travelling direction of the tape in cooperation with an associated means.

3,572,607

FISHING REEL

Harry D. Wilson, 225 10th Ave., San Francisco, Calif.

Filed Apr. 22, 1968, Ser. No. 729,138
Int. Cl. A01k 89/00
U.S. Cl. 242—218 30 Claims



A fishing reel comprises a handle and a clutch pressure plate mounted for rotation on an axle thereof. The drag on a spool, having a fishing line suitably wound thereon, may be varied within a predetermined range by manipulating the handle only. Rotation of the handle drives the pressure plate, a spring and a clutch sleeve which in turn impart drive to the spool via a slipping clutch.

3,572,608

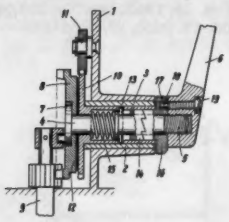
FISHING REEL

Rudolf Schultz, Berlin, Germany, assignor to Deutsche Angelgerate Manufaktur (DAM) Kantze Gesellschaft mit beschrankter Haftung & Co., Kommanditgesellschaft, Berlin, Germany

Filed Apr. 7, 1969, Ser. No. 813,867
Claims priority, application France, June 19, 1968, 155,544
Int. Cl. A01k 89/00
U.S. Cl. 242—218 2 Claims

A fishing reel has a driving shaft for the wind-up roller. A handle is screwed upon the shaft and the inner end of the

shaft carries a wheel frictionally driving the wind-up roller. This wheel can be connected by a coupling with a hollow shaft provided with a one way lock freely movable in the winding direction. The coupling is opened by a rearward



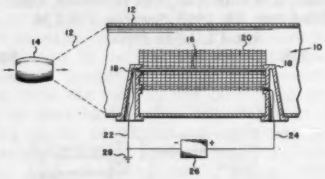
turning of the handle. The invention is particularly characterized in that the handle is screwed upon a threaded outer end of the driving shaft and that the driving shaft is connected with the hollow shaft by a transverse pin so as to prevent relative turning but with small axial play.

3,572,609

STATIC DISCHARGED FROM JET AIRCRAFT

Roy G. R. Slawson, Sylmar, Calif., assignor to Lockheed Aircraft Corporation, Burbank, Calif.

Filed May 2, 1969, Ser. No. 821,206
Int. Cl. B64d *45/02*
U.S. Cl. 244—1 **8 Claims**



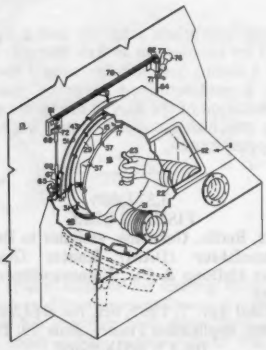
A static discharger for an aircraft is described which employs a stream of gas passing between and over spaced, charged electrodes on the aircraft. One of the electrodes is perforated and is located around the other of the electrodes. To obtain best performance the gas stream contains finely divided carbon or smoke particles.

3,572,610

THRUSTER MAINTENANCE SYSTEM

T. O. Paine, Administrator of the National Aeronautics and Space Administration with respect to an invention of; Jerry P. Hethcoat, and Roland H. Norton, Huntsville, Calif.

Filed July 9, 1969, Ser. No. 840,176
Int. Cl. B64g *1/00*
U.S. Cl. 244—1 **5 Claims**



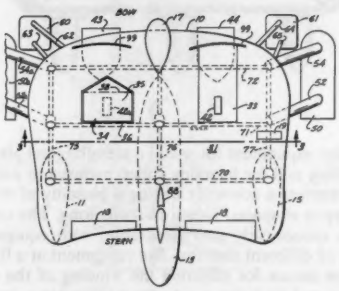
A system for maintenance of a spacecraft thruster. The thruster is mounted on the exterior surface of a panel removably mounted on the spacecraft wall. A portable airlock is provided which may be removably sealed to the interior surface of the spacecraft wall about the removable panel. An operator within the spacecraft inserts his arms into space suit-type gloves extending into the airlock which enable him to remove the thruster panel and replace it with a new panel, afterwhich the portable airlock may be removed from the spacecraft wall.

3,572,611

SEA-GOING VESSELS WITH SEPARABLE MODULES

Robert F. Oulton, Annapolis, Md. (1512 Suncrist St., Midland, Mich. 48640)

Filed Nov. 22, 1968, Ser. No. 778,175
Int. Cl. B64c *37/02*
U.S. Cl. 244—2 **40 Claims**



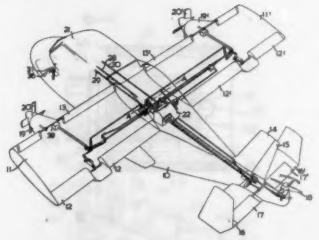
A seagoing vessel, such as an aircraft carrier, is made up of separable modules, some of which can fly, and/or submerse, individually, and can be quickly joined together to fly or to submerge collectively, and to provide a large aircraft-supporting surface. This minimizes the target for enemy attack. The complete vessel can be quickly disassembled to permit interchanging units or provide for quick turn around in port.

3,572,612

PROGRAMMING AND MIXING UNIT FOR VTOL AIRCRAFT

Karl Irbitis, Montreal, Quebec, Canada, assignor to Canadair Limited, Montreal, Quebec, Canada

Filed July 15, 1968, Ser. No. 744,828
Claims priority, application Canada, Aug. 2, 1967, 996911
Int. Cl. B64c *29/00*
U.S. Cl. 244—7 **63 Claims**



A control system for a tilt wing VTOL aircraft is described. In normal or horizontal flight at a wing tilt angle of zero, the conventional attitude control elements have control authority i.e. the pilots pitch, yaw and roll controls are transmitted respectively to the usual elevators, rudder, and ailerons. As wing tilt angle increases, however, roll control authority is gradually transferred to laterally spaced thrust producers positioned on the aircraft wings, while yaw control authority is gradually transferred to the ailerons. At the same time,

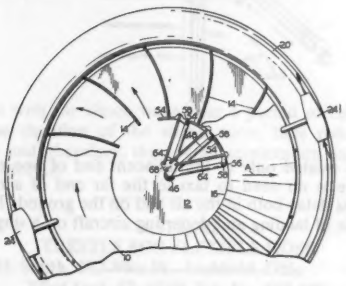
pitch control authority is gradually transferred by the control system to the only auxiliary attitude control element required, namely a vertical thrust producer located adjacent the tail end of the aircraft. The transfers of control authority are effected by a mixing and programming unit which includes a plurality of mechanisms the gain of which vary in response to the angle to the angle of wing tilt, such mixing and programming unit having inputs connected to receive the pilots pitch yaw and roll control signals, and outputs connected to the above mentioned attitude control elements.

3,572,613

CIRCULAR WING AIRCRAFT

Arthur Porter, 3015 River Road, Eugene, Oreg.

Filed Feb. 17, 1969, Ser. No. 799,573
Int. Cl. B64c *29/00*
U.S. Cl. 244—12 **6 Claims**



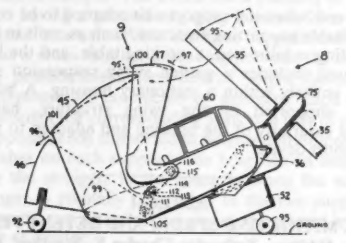
A hollow, circular housing is open about its periphery and has a central opening in its top. Circumferentially spaced vanes extend between the central opening and the open periphery to direct air flow from the central opening radially outward through the open periphery and across the upper and lower surfaces of an annular airfoil wing secured to the housing. A pair of jet engines at the housing periphery operate to rotate the housing to effect said movement of air.

3,572,614

AIRCRAFT

William R. Bertelsen, 4343-18th Ave., Rock Island, Ill.

Continuation of application Ser. No. 707,382, Feb. 14, 1968, now abandoned , which is a continuation of application Ser. No. 125,005, July 18, 1961, now abandoned , Continuation-in-part of application Ser. No. 652,298, Apr. 11, 1957, now abandoned. This application Oct. 20, 1969, Ser. No. 867,951
Int. Cl. B64c *15/06, 15/12*
U.S. Cl. 244—12 **18 Claims**



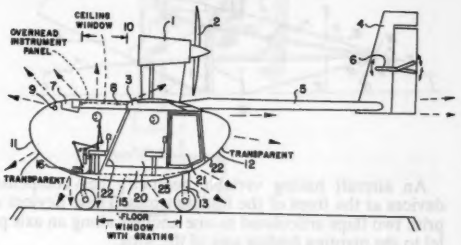
The present invention relates to aircraft, and more particularly to structure and controls for aircraft adapted to take off and land in substantially the vertical direction. While not limited thereto, the preferred structure to be described in detail is of the canard type, and achieves at least the majority of control in empennage positioned forward of the main supporting surfaces and adjacent one or more rotors or propellers, or the like.

3,572,615

AIRPLANE WITH SPATIAL PANORAMA

Floyd A. Firestone, 172 Clinton Ave., Dobbs Ferry, N.Y.

Continuation-in-part of application Ser. No. 660,700, Aug. 15, 1967, now abandoned , which is a continuation-in-part of application Ser. No. 616,053, Feb. 14, 1967, now abandoned. This application Mar. 7, 1969, Ser. No. 806,346
Int. Cl. B64c *1/14*
U.S. Cl. 244—13 **44 Claims**



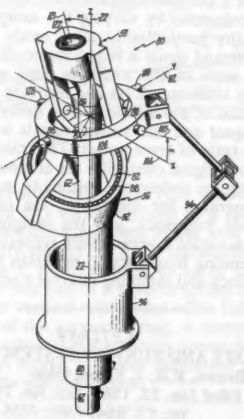
A fixed wing airplane having a substantially transparent fuselage, which in straight and level flight permits both the pilot and copilot to see the entire ground and sky in all directions and from nadir to zenith, with the exception of roughly two steradians of solid angle in the quadrant above and behind him. The necessary opaque struts which cross the transparent areas are so oriented and dimensioned that the distant scene as seen through the major areas of the plane appears to be continuous, advantage being taken of the fact that the pilot has two eyes whose lines of regard are not simultaneously occulted by narrow struts properly spaced and oriented. Utilizing the same fact of vision, instrument arrays and stressed skin structures are described, that the pilot can see through.

3,572,616

PITCH CONTROL MECHANISM FOR BLADED ROTOR

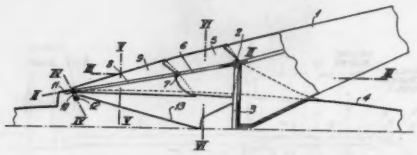
Harold Danford Ulisnik, Trumbull, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Sept. 18, 1969, Ser. No. 859,137
Int. Cl. B64c *27/10, 27/72*
U.S. Cl. 244—17.23 **13 Claims**



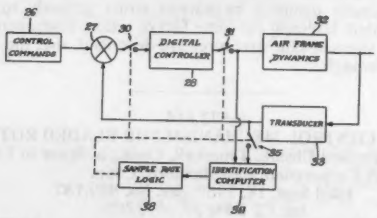
Two Z-crank mechanisms connect at different stations to a rotor swashplate so that translation of the mechanisms causes collective pitch variation of the blades and so that rotation of the mechanisms either together or separately causes cyclic pitch variations of the blades.

3,572,617
AIRCRAFT OF VARIABLE CONFIGURATION
Armand G. Ricard, Viroflay, Yvelines, France, assignor to Brequet-Aviation, Velizy, Yvelines, France
Filed Feb. 26, 1969, Ser. No. 802,380
Claims priority, application France, Mar. 5, 1968, 142,393
Int. Cl. B64c 3/40
U.S. Cl. 244—46 6 Claims



An aircraft having variable geometry has compensating devices at the front of the folding wings. These devices comprise two flaps articulated to one another along an axis parallel to the pivoting folding axis of the wing.

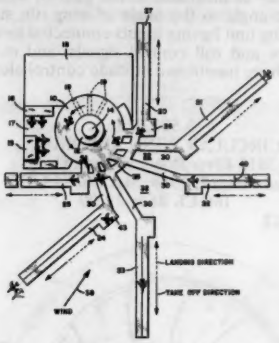
3,572,618
METHOD FOR STABILIZING AIRCRAFT AND MISSILES
Richard M. Willett, Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa
Filed Nov. 1, 1967, Ser. No. 679,850
Int. Cl. B64c 13/18
U.S. Cl. 244—77 3 Claims



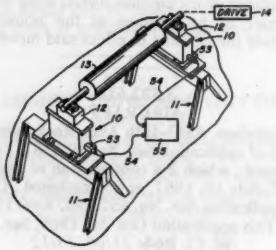
Stability of a sampled-data feedback control system for an airframe is enhanced by varying the sampling interval as a function of the particular bending mode the airframe exhibits. A command signal is fed to the control system for controlling the state of the airframe; and sensed signals are generated by transducers on the airframe representative of the actual state of the airframe. The difference between the command signal and the sensed signals is sampled thereby generating a train of error pulses. The train of error pulses is then fed into a digital controller for computing digital signals for controlling the airframe according to its characteristics. A signal is generated for identifying the instantaneous body bending mode frequency; and the sampling interval of the error signal is varied inversely with respect to the instantaneous body bending frequency to maintain the product of the mode frequency and sampling interval a constant.

3,572,619
AIRPORT AND RUNWAY SYSTEM THEREFOR
Edward G. Brown, R.R. 2, Eaton, Ohio
Filed Jan. 22, 1969, Ser. No. 792,939
Int. Cl. B64f 1/00, 1/36
U.S. Cl. 244—114 7 Claims

Airports are disclosed which have runways laid out so that they do not intersect. The runways are formed in centerline-aligned pairs, and have adjacent ends which are spaced apart so that when one of the runways of the pair is used for incoming or landing traffic the other runway may be used for departure traffic. The adjacent ends only of the runways are provided with short taxiways leading to a terminal ramp area. The landing aircraft proceeds to the end of its runway onto the taxiway and into the ramp area, and the departing aircraft proceeds by way of the taxiway to the adjacent end of a departure runway. The taxi distances both inbound and outbound are related only to the adjacent end of one runway. Since there is no need to taxi to the far end of a runway, there is less delay both in the air and on the ground. There is no intermix of landing and departing aircraft on a single runway.



3,572,620
BALANCING SUPPORT UNIT
Harry R. Kincaid, Rte. 3, Box 157A, Johnstown, Ohio, and William D. Wardle, 1887 Oakland Ave., Columbus, Ohio
Filed Sept. 15, 1969, Ser. No. 857,748
Int. Cl. F16m 13/00; G01m 1/16
U.S. Cl. 248—17 7 Claims

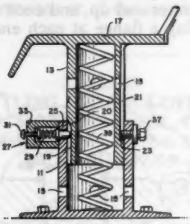


Improved balancing support unit adapted to be connected to any suitable supporting structure, such as, rails in the floor of a building, a lathe bed, a working table, and the like. The support unit includes a garden swing suspension structure disposed entirely within a stationary housing. A supporting pedestal, supported by the swing structure, has a top presented exteriorly of the housing and adapted to receive a rotor support device.

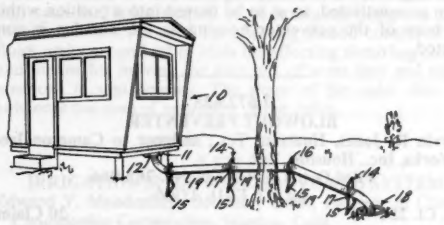
3,572,621
SHOCK MITIGATING SPRING AND DETENT PEDESTAL
Frank I. Whitten, Bethesda; Charles E. Strother, Rockville, and Joseph Gesswein, Bethesda, Md., assignors to the United States of America as represented by the Secretary of the Navy
Filed Sept. 27, 1968, Ser. No. 763,145
Int. Cl. F16f 15/00
U.S. Cl. 248—20 3 Claims

A personnel protecting pedestal has two telescoping elements biased apart by a coil spring and held together by a limit stop. A detent prevents telescoping of the elements

toward each other until a predetermined shock loading is reached. The force needed to compress the spring is less than the force needed to release the detent, so that upon occurrence of a shock wave, the spring distributes the velocity associated with the shock wave over a period of time longer than the duration of the shock wave, thus reducing the velocity and, therefore, the overall acceleration on the load to be protected.



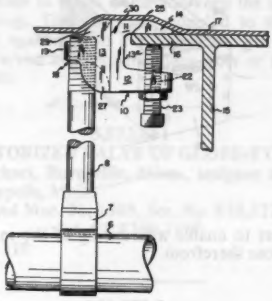
3,572,622
TRESTLE FOR FLEXIBLE HOSE
Harold H. Smith, 502 Vine St., Archbold, Ohio
Filed Sept. 17, 1969, Ser. No. 858,697
Int. Cl. F16l *3/02*
U.S. Cl. 248—49 **6 Claims**



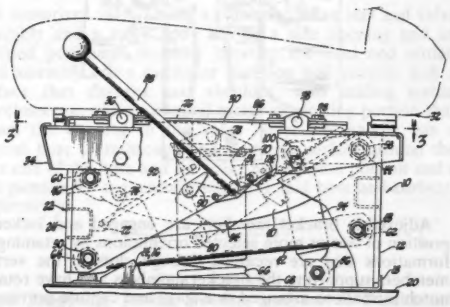
A trestle for a flexible hose such as a waste hose for a house trailer or camper. The trestle has a plurality of support units, each having a ground engaging base and two spaced, vertical arms between which the hose is positioned. Each support has a cross member extending between the arms and adjustably positionable at any desired height thereon. The support members are connected by stringers. Each stringer extends between the corresponding arms of a pair of supports with its opposite ends supported at heights determined by the cross member on each support. The hose lies on and is supported by the stringers in the spans between the supports. Each stringer is pivotally connected to the two supports so that the trestle can extend along above the ground in a nonlinear path as desired.

3,572,623
PIPE HANGER CLAMP
Chester A. Lapp, 11881 Prospect Road, Cleveland, Ohio
Filed Aug. 6, 1969, Ser. No. 848,011
Int. Cl. F16l *3/00*
U.S. Cl. 248—72 **2 Claims**

A cast iron pipe hanger clamp having a solid body with upper and lower jaws projecting from one side, and a boss projecting from the center of the opposite side and braced by upper and lower pairs of spaced flanges. The boss has a threaded bore with jam threads to receive a threaded pipe hanger rod between the spaced flanges, the load of the supported weight being distributed and loading the upper flanges in tension. A setscrew in one jaw locks the clamp in position and loads all four flanges in compression, reducing or eliminating tension load in the upper flanges.



3,572,624
SUSPENSION SEAT
Carl J. Holdampf, Southfield, and Randal T. Murphy, Royal Oak, Mich., assignors to Lear Siegler, Inc., Santa Monica, Calif.
Filed Aug. 18, 1969, Ser. No. 850,938
Int. Cl. B60n *1/02*
U.S. Cl. 248—376 **17 Claims**

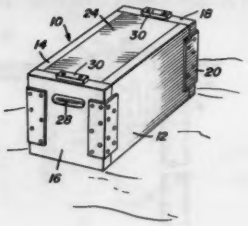


A vertically adjustable seat of the type wherein the seat portion is connected to a mounting base by a parallelogram linkage to permit vertical adjustment of the seat without affecting the angularity thereof. A force transmitting adjuster mechanism such as a bidirectionally lockable jack is connected between the free end of a support spring and the seat portion to effect the vertical adjustment while fully retaining the resilient effect of the support spring. A damping device, such as a shock absorber, is mechanically connected in parallel with the support spring to damp oscillation of the seat portion relative to the mounting base.

3,572,625
BLOCK FORMING DEVICE
Eddie E. Williamsen, 711 S. First St., Norfolk, Nebr.
Filed May 13, 1968, Ser. No. 728,508
Int. Cl. B28b *7/10*
U.S. Cl. 249—117 **2 Claims**

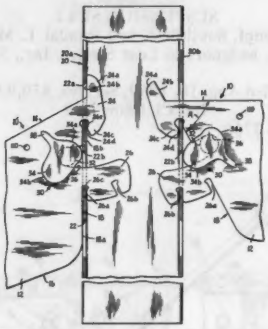
A mold for forming blocks of snow including four right angularly related walls, an open top and an open bottom. One

of the walls is slightly inclined outward so as to facilitate the removal of the block. Two of the opposed walls are provided



with bumpers to enable a bouncing of the mold in shaking the block loose therefrom.

3,572,626
ADJUSTABLE BRACKET
Hans Bertschi, Upper Montclair, N.J., assignor to J. C. Penney Company, Inc., New York, N.Y.
Filed Nov. 13, 1968, Ser. No. 775,370
Int. Cl. A47f *5/08*
U.S. Cl. 248—242 **4 Claims**



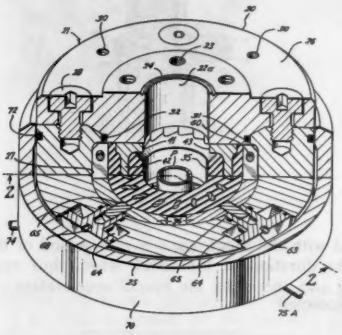
Adjustable bracket members are engaged and locked in position of two or more selected orientations by retaining lug formations that are received through slots in the vertical members supporting the bracket members and have retainer notch formations arranged to engage and capture portions of the wall of the vertical member adjacent the slots. Locking members having a cam surface for each of the positions of the bracket urge the lug formations into firm engagement with the vertical member and further insure the retention of the bracket members in proper position.

ERRATUM

For Class 249—117 see:
Patent No. 3,572,625

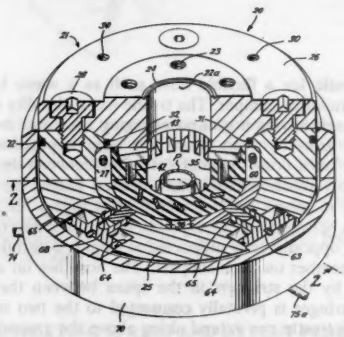
3,572,627
BLOWOUT PREVENTER
Marvin R. Jones, and Benton Baugh, Houston, Tex., assignors to Cameron Iron Works, Inc., Tex.
Filed Oct. 4, 1968, Ser. No. 765,061
Int. Cl. E21b *33/06*
U.S. Cl. 251—1 **17 Claims**

An annular blowout preventer comprising a housing having a bore through it and an annular recess extending outwardly from the bore, and a packer within the recess including an annulus of deformable material having a bore aligned with the housing bore and a circular series of rigid inserts extending therethrough from one end to the other. A sealing surface on an end portion of the annulus engages the oppositely facing end surface of the recess, and there are radially movable parts about the outer side of the annulus for constricting the packer to urge its bore into position to seal about a member in the bore of the housing or upon itself when the bore is empty. The packer is symmetrical end-for-end so that it may be disposed with either end up, and each of the rigid inserts includes a rib having a flange at each end. The flanges are



skewed in the unconstricted position of the annulus and are caused to swing into more radial positions as the annulus is constricted. The sides of the flanges are adjacent one another to confine the annulus at its opposite ends and cause the inserts to move in unison, and the radially innermost ends of the flanges are substantially adjacent the bore of the annulus when unconstricted, so as to be moved into a position within the bore of the preventer housing as the annulus is constricted.

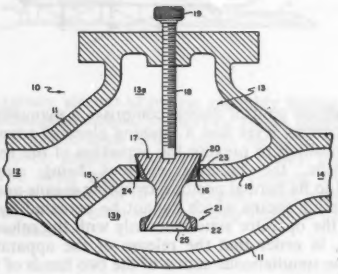
3,572,628
BLOWOUT PREVENTER
Marvin R. Jones, Houston, Tex., assignor to Cameron Iron Works, Inc., Houston, Tex.
Filed Oct. 4, 1968, Ser. No. 765,066
Int. Cl. E21b *33/06*
U.S. Cl. 251—1 **20 Claims**



An annular blowout preventer comprising a housing having a bore through it and an annular recess extending outwardly from the bore, and a packer within the recess including an annulus of deformable material having a bore aligned with the housing bore and a circular series of rigid inserts extending therethrough from one end to the other. A sealing surface on an end portion of the annulus engages the oppositely facing end surface of the recess, and there are radially movable parts about the outer side of the annulus for constricting the

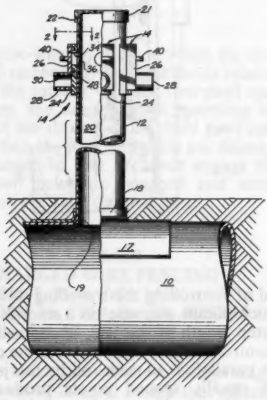
packer to urge its bore into position to seal about a member in the bore of the housing or upon itself when the bore is empty. The packer is symmetrical end-for-end so that it may be disposed with either end up, and each of the rigid inserts includes a rib which has opposite sides lying generally in planes of least strain of the deformable material of the annulus during radial movement of the inserts upon constriction of the packer.

3,572,629
THROTTLING AND SHUT-OFF VALVE
Edward Coe Clark, 5602 Hawthorne St., Cheverly, Md.
Filed July 28, 1969, Ser. No. 845,447
Int. Cl. F16k *47/08*
U.S. Cl. 251—121 **1 Claim**



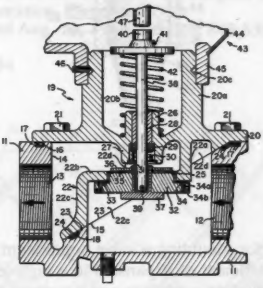
A valve arrangement for controlling the flow of fluids which contains a valve disc positioned in a valve disc housing, said disc being shaped in an hourglass design so as to provide a first set of seats for effecting shutoff control of said fluids and a second set of seats for effecting throttling control and means for moving the two sets of seats into and out of positions in said housing. The shape of the valve disc also enhances the ease of operation of the valve.

3,572,630
IRRIGATION SLIDE GATE VALVE AND SYSTEM
Edward V. Mendenhall, Del Mar, Calif., assignor to Climate Conditioning Corporation, Stanton, Calif.
Filed Apr. 24, 1969, Ser. No. 819,043
Int. Cl. E02b *13/00*; **F16k** *3/316*
U.S. Cl. 251—145 **4 Claims**



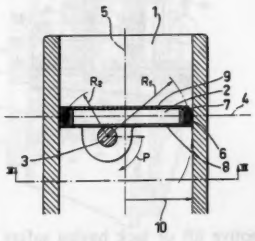
A high strength-to-weight ratio plastic is used in the fabrication of an irrigation slide gate valve system which includes a water distribution pipe or conduit, slide gate valves and a riser. The riser is capped. The slide gate valves include a slide which is coupled through a mounting base to the riser. The slides have spouts which are selectively positionable over water passages in the mounting bases to produce metered flow from the riser. An O-ring in each mounting base urges against each slide to effect a seal and keep the slides in their desired positions. The slides are coupled to the mounting bases through spaced apart and facing flanges of the slides which are received in complementary slots or tracks in the mounting bases.

3,572,631
MOTORIZED VALVE OF GLOBE-TYPE
Stuart T. Ritchart, Burnsville, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Mar. 26, 1969, Ser. No. 810,512
Int. Cl. F16k *1/00*
U.S. Cl. 251—210 **5 Claims**



A motorized valve having a combined valve seat and valve assembly and a valve body having a side opening and an inclined peripheral shoulder between the inlet and outlet. Said assembly has a saddle or partition wall portion with a surface that engages said shoulder, with sealing means therebetween, and an integral motor-supporting portion that closes the opening in the valve body. The saddle has a smooth bore therethrough and a smooth surface around the inlet end of the bore and the valve has a piston portion and a disc portion for sequentially engaging said bore and surface, respectively.

3,572,632
FLAP VALVE
Gosta Bengtsson, Farsta, Sweden, assignor to Sundstrand Hydraulic AB, Huddinge, Sweden
Filed Mar. 10, 1969, Ser. No. 805,654
Int. Cl. F16k *1/22*
U.S. Cl. 251—306 **3 Claims**



A flap valve in which a flap mounted in a cylindrical bore and which is pivotal from a closed to open position, and vice

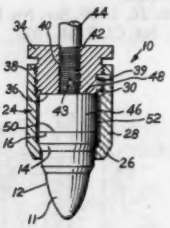
versa, about an axle oriented perpendicular to the longitudinal axis of the cylindrical bore, has the rotation axis of the flap located on one side of the sealing plane of the flap at a certain distance thereto and unsymmetrically in the bore with said distance to the longitudinal symmetry axis of the cylindrical bore.

3,572,633

ATTACHMENT MEANS FOR VALVE COMPONENTS

Donald J. Gaffney, Marshalltown, Iowa, assignor to Fisher Controls Company, Inc.

Filed July 25, 1969, Ser. No. 854,338
Int. Cl. F16k *1/42, 1/48*
U.S. Cl. 251—356 6 Claims



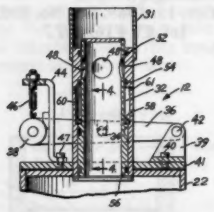
Apparatus for mounting a valve component having a relatively low coefficient of expansion in a high-temperature environment including a retainer and a support member joined to one another to form a holder for holding the valve component securely. An expansion plug having a relatively high coefficient of expansion is between the valve component and the holder to maintain the valve component and holder in desired vibration-free mounted relationship throughout a wide temperature range.

3,572,634

AUTOMOTIVE JACK WITH SAFETY PRESSURE RELEASE

Gaylord B. Haviland, Mainville, Ohio, assignor to Big Four Automotive Equipment Corporation

Filed Dec. 26, 1968, Ser. No. 786,916
Int. Cl. B60p *1/00*; B66f *3/24*; F15b *11/04*
U.S. Cl. 254—2 9 Claims



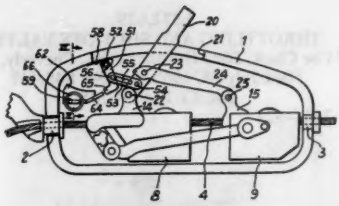
An automotive lift or jack having safety pressure release means for releasing pressure from the pressure chamber within the piston and cylinder means in the event the load is suddenly dropped or freed from the support means on the jack.

3,572,635

RELEASE CONTROL AND SAFETY DEVICE FOR CLAMP-TYPE TRACTION AND HOISTING APPARATUS

Andre Emile Evariste Desplats, Boulogne-Billancourt, France, assignor to Tractel S.A., Paris, France

Filed June 25, 1969, Ser. No. 836,318
Claims priority, application France, June 27, 1968, 156 882
Int. Cl. B66f *3/00*
U.S. Cl. 254—76 1 Claim



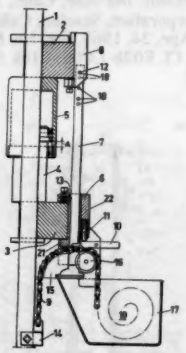
The release control device comprises a manually movable release control lever and a latching element adapted in the normal position to prevent the actuation of the release control device, the latching element being automatically returned to its normal position by spring means and comprising actuating means which cannot be actuated by the same hand of the operator simultaneously with the release control member, in order that the release of the apparatus necessitates the simultaneous action of the two hands of the operator on the release control member and on the latching element.

3,572,636

DEVICE FOR AUTOMATIC CONTROL OF CLIMBING JACK MOVEMENTS

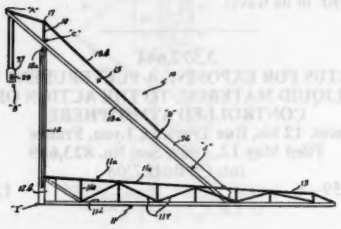
Rolf Gustaf Johansson, Saltsjo-Duvnas, Sweden, assignor to A B Byggforbattring, Stockholm, Sweden

Filed Apr. 22, 1968, Ser. No. 722,975
Claims priority, application Sweden, Apr. 25, 1967, 5808/1967
Int. Cl. B66f *1/00*; E02d *21/00*
U.S. Cl. 254—106 9 Claims



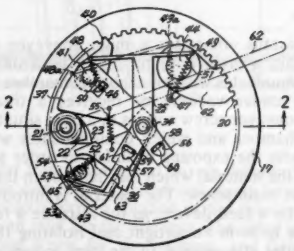
A method of controlling the travelling distance of a climbing jack which climbs stepwise on a smooth climbing rod in which the step length of the jack is controlled by a flexible elongated control member connected to the climbing rod and stretched in parallelism to such rod by the jack. The control member at equally spaced points produces impulses in cooperation with a locking means provided for the jack so that by such impulses in cooperation with the locking means, the step length of the stepwise movement of the jack is limited.

3,572,637
AIRCRAFT CRASH RECOVERY HOIST
James P. Mitchell, Jr., 14262 Oxford, Vectorville, Calif.
Filed Sept. 6, 1968, Ser. No. 757,966
Int. Cl. B66c 23/60
U.S. Cl. 254—139.1 2 Claims



An emergency aircraft-lifting-rig assembly having a main upright, rectangular-shaped supporting frame member supporting two spaced-apart lifting boom elements which, in turn, collectively support a pair of lifting pulley- and -cable systems. The latter are attached to a floating crossbeam member which is utilized to interconnect both pulley- and-cable systems with a main hoisting strap attached to the aircraft to be raised.

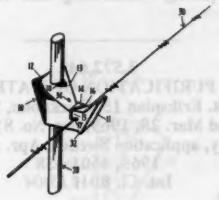
3,572,638
MANUALLY OPERATED WINCH
Masamitsu Tatsuguchi, Funabashi, Japan, assignor to Mitsui Shipbuilding and Engineering Co. Ltd., Tokyo, Japan
Filed Sept. 24, 1969, Ser. No. 860,490
Claims priority, application Japan, Sept. 25, 1968, 43/69615
Int. Cl. B66d 1/04
U.S. Cl. 254—150 3 Claims



A winch for a wire-winding drum in which the drum has an internally toothed ratchet having three pawls spaced circumferentially about the ratchet with the first pawl operating to advance the drum, the second pawl operating to prevent reverse rotation of the drum and the third pawl operating to arrest the drum when the first two pawls are disengaged. The third pawl is arranged so that it cannot engage the ratchet when the first two pawl are engaged and automatically escapes the ratchet when the drum reverses.

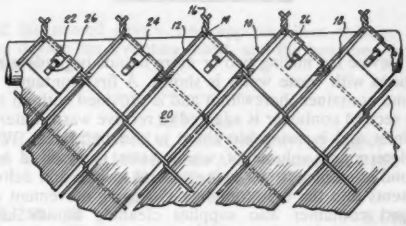
3,572,639
CHARGED WIRE FENCING
Ralph E. Shettel, Rte. 1, Twin Falls, Idaho
Filed May 16, 1969, Ser. No. 825,151
Int. Cl. A01k 3/00
U.S. Cl. 256—10 4 Claims

A charged wire fence line structure comprising insulator and post components of integral design that effectively simplify the construction of portable and rotation systems, while adapting to existing fence lines. The insulator selectively receives and contains the wire without being attached thereto. The supporting post offers the insulator diverse vertical position for the creation of single fence lines or multi-



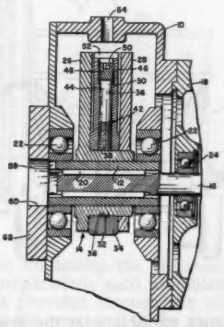
ples of fence lines spaced apart from each other to better effect the control of livestock of whatever kind.

3,572,640
FENCE LATTICE AND RETAINING MEANS THEREFOR
Francis Vecchiarelli, River Edge, N.J., assignor to Alcan Aluminum Corporation, Cleveland, Ohio
Filed Aug. 11, 1969, Ser. No. 848,839
Int. Cl. E04h 17/02
U.S. Cl. 256—34 1 Claim



The combination of a chain link fence and an elongated metallic fence slat located in a channel formed by the fence links, and having a clip for firmly locking the slat in place within the fence fabric.

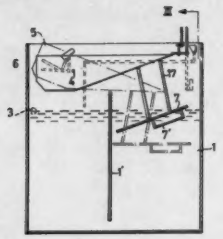
3,572,641
ROTARY VIBRATOR WITH ADJUSTABLE WEIGHT MEANS
Edwin F. Peterson, 119 Main St., Neponset, Ill., and Carl G. Matson, 401 E. Central Blvd., Kewanee, Ill.
Filed Feb. 3, 1969, Ser. No. 802,316
Int. Cl. B06b 1/16
U.S. Cl. 259—1 4 Claims



A rotary vibrator of the eccentric weight type has its weight means comprised of at least two separate parts that

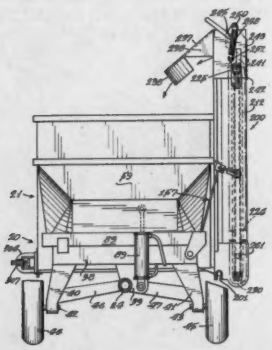
are relatively angularly positionable selectively about the shaft axis so as to enable selection of the amount of unbalance and thus to achieve variation in the vibratory forces, all without requiring dismantling and reassembly of the machine.

3,572,642
PURIFICATION OF WATER
Bertil Waller, St. Eriksplan 15, Stockholm, Sweden
Filed Mar. 28, 1969, Ser. No. 811,529
Claims priority, application Sweden, Apr. 5, 1968, Jan. 20, 1969, 4601;658
Int. Cl. B01f *15/04*
U.S. Cl. 259—2 **9 Claims**



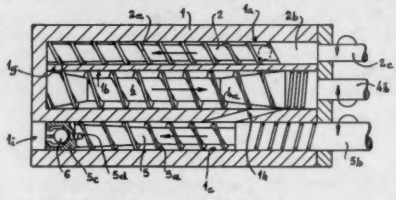
A device for mixing two or more liquids in predetermined portions with waste water is shown. A first container has a second container therewithin and is provided with an outlet. The second container is adapted to receive waste water from an inlet and is swingable about a horizontal axis. When a predetermined volume of waste water is received by the second container it will swing around its axis and deliver its contents into the first container. Swinging movement of the second container also supplies cleaning liquids kept in separate containers into said first container. The second container is asymmetrically shaped and is divided into two chambers communicating with one another.

3,572,643
MATERIAL CARRIER APPARATUS
Bert A. Birdsall, Mondamin, Iowa
Filed Aug. 15, 1968, Ser. No. 752,843
Int. Cl. B01f *15/02*
U.S. Cl. 259—4 **5 Claims**



A material carrier movable over the ground and having structure to facilitate downward flow of material therein to a discharge opening and with structure for tilting of the carrier relative to the supporting frame and additionally with improved elevator mechanism for elevating material and for discharging it either away from the carrier or back into the container box of the carrier, with provisions for spreading the material over the area of the container. Automatic cycling feed mixer structure disposable in the container mixes material carried therein and an insertable cross conveyor conveys material outwardly from the bottom of the container. Additionally, an alternately usable auger conveyor is provided with an elevating auger and a charging auger to advance material to the elevating auger to have it carry a full load and with a common drive including a belt changing direction 90° in its travel.

3,572,644
APPARATUS FOR EXPOSING A PULVERULENT PASTY OR LIQUID MATERIAL TO THE ACTION OF A CONTROLLED ATMOSPHERE
Pierre Poncet, 12 bis, Rue Trarieux, Lyon, France
Filed May 12, 1969, Ser. No. 823,689
Int. Cl. B01f *7/08*
U.S. Cl. 259—6 **12 Claims**

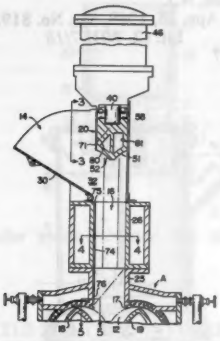


The apparatus comprises a main conveyor screw which rotates within a main bore having at least one lateral slot which communicates with an exposing chamber. The latter is maintained under vacuum or receives a treating gas. A returning conveyor screw rotates in a bore situated below the exposing chamber and which communicates with the main bore and with the exposing chamber in order to return into the former the material which may have been thrown into the latter by the main screw. The material is introduced into the main bore by a feed device, as for instance a feed screw, so arranged as to form an airtight seal isolating the main bore from the outer atmosphere. In the same manner the material treated is withdrawn from the main bore by an outlet device also forming an airtight seal. More particularly in the case of pasty or plastified materials the airtight seal may be obtained by increasing the diameter of the core of the screws in order to compress the material in the form of a plug between the successive turns.

3,572,645
MIXING MACHINE
James T. Matsuoka, Brecksville, Ohio, assignor to Intercole Automation, Inc., Cleveland, Ohio
Filed Nov. 6, 1968, Ser. No. 773,928
Int. Cl. B01f *7/02*
U.S. Cl. 259—21 **7 Claims**

An apparatus for mixing rubbers, elastomers, plastics, and similar material, preferably of the internal mixer type, such as Banbury type mixer, having frame structure forming a mixing chamber, rotors within the mixing chamber for mixing materials therein, a material charging hopper mounted on the frame structure above the mixing chamber and having a charging conduit communicating with the mixing chamber and a floating weight or member movable for applying pressure on the material to be mixed. The floating weight

member and interior of the charging conduit include structure to vent gases from the mixing chamber when the floating weight is in a lower position adjacent the mixing chamber.



3,572,646

APPARATUS FOR TRANSFORMING AND MIXING DEFORMABLE MEDIA

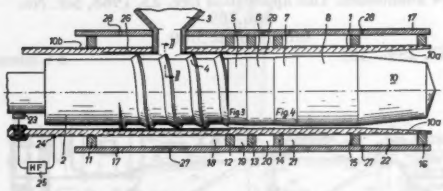
Heinz Kocher, Centralstrasse 41, Neuhausen, Switzerland

Filed Apr. 16, 1968, Ser. No. 721,816

Claims priority, application Austria, Apr. 17, 1968, A-3592/67

Int. Cl. B01f *7/02*

U.S. Cl. 259—25 **11 Claims**



Apparatus for transforming and mixing deformable media, such as plastics, comprises a cylindrical casing having a rotor mounted for coaxial driven rotation in the cylinder which is provided with an inlet for the medium. The rotor is provided with a conveyor screw for the medium, and following the screw in the direction of flow the rotor comprises diverging diffusor portions alternating with cylindrical rotor portions. The end of the rotor adjacent the outlet of the cylinder is formed as a converging diffusor. The different rotor portions coact with surrounding wall portions of the cylinder having portions with a surface finish differing from that of the rotor portions to subject the medium flowing in the space between the rotor and the surrounding casing wall to differing frictional resistance along the external and internal layers thereof.

3,572,647

PROCESS AND APPARATUS FOR HANDLING MATERIALS IN DUST AND POWDER FORM

Hans Peter Staheli, Pratteln, Switzerland, assignor to Buss A. G., Basel, Switzerland

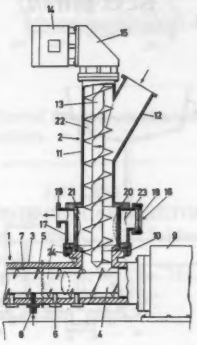
Filed Mar. 4, 1969, Ser. No. 804,164

Claims priority, application Switzerland, Mar. 8, 1968, 3413/68

Int. Cl. B01f *7/02*

U.S. Cl. 259—25 **4 Claims**

Process and apparatus for handling materials in dust and powder form, comprising the steps of, and means for, filling materials into a feeding device, venting and precompacting the materials therein, feeding them into a mixing and kneading device, further venting, compacting and transferring them in said last-named device, and applying heat therein. The feeding device has a venting insert, and the kneading device has a worm shaft.



3,572,648

PHARMECEUTICAL TESTING INSTRUMENT

William A. Hanson, 10945 Nestle Ave., Northridge, Calif.

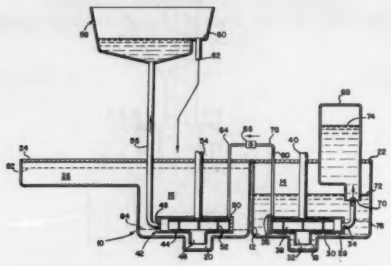
Filed June 13, 1969, Ser. No. 832,936

Int. Cl. B01f *9/00*

U.S. Cl. 259—90 **8 Claims**

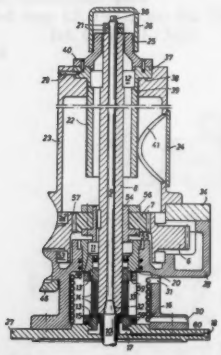
A basket stirrer for testing the dissolution rate of solid pharmaceutical preparations such as tablets and capsules. Passage means is provided through the drive plug which forms a closure at the upper end of the generally cylindrical screen basket to break the air or fluid lock which otherwise introduces errors in the routine laboratory use of this type of equipment by preventing proper fluid drainage from the basket when it is raised out of the testing solution at the end of a test, or proper circulation of the fluid through the basket during the test.

3,572,649
APPARATUS FOR AGITATING AND ADDING A LIQUID TO A LIQUID FLOW SYSTEM
Henry G. Joel, New York, N.Y., assignor to Ing. C. Olivetti & C. S. p. A., Ivrea, Italy
Filed Jan. 15, 1970, Ser. No. 3,082
Int. Cl. B01f 5/12
U.S. Cl. 259—95 21 Claims



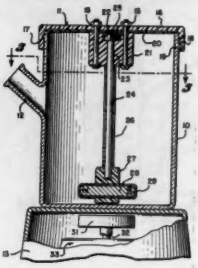
Apparatus for accurately adding a liquid to a flow system, where the additive liquid is continuously agitated by a recirculating device which is connected to the flow system. Discharge from the recirculating device is set against discharge from the prime mover of the liquid in the flow system so that additive liquid will enter the flow system when the pressure of the liquid in the flow system drops below the pressure of the additive liquid.

3,572,650
STIRRING APPARATUS
Dieter Kupka, Kirn, Nahe, Germany
Filed May 5, 1969, Ser. No. 821,912
Claims priority, application Germany, May 4, 1968, P 17 50 468.6
Int. Cl. B01f 7/00
U.S. Cl. 259—103 5 Claims



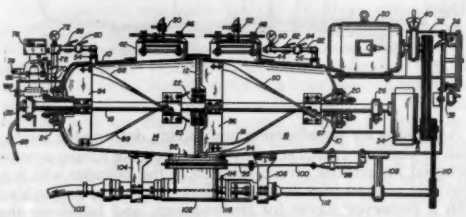
In a stirring apparatus the slide ring packing for the stirring shaft extending into a high pressure vessel is disposed in the agitator gear housing about the drive shaft secured to the end of said stirring shaft in axial alignment therewith. For replacing the slide ring packing, said drive shaft may be disconnected from said stirring shaft and axially displaced with said slide ring packing through said gear housing into a tubular casing disposed thereabove and communicating therewith. The tubular casing is provided with a lateral opening through which the slide ring packing, now aligned therewith, may be replaced.

3,572,651
SPIN-CULTURE FLASK FOR CELL CULTURE
William S. Harker, Vineland, N.J., assignor to Wheaton Industries, Millville, N.J.
Filed Apr. 28, 1969, Ser. No. 819,857
Int. Cl. B01f 7/18
U.S. Cl. 259—107 7 Claims



A flask for the suspension culture of cells in a medium of nutrient substances is provided in which the suspension is given an orbital motion by a magnetic impeller which is suspended in the culture medium. All of the elements in contact with the suspension are inert thereto.

3,572,652
APPARATUS FOR MIXING, DISPENSING AND DISPERSING WET OR DRY PLASTIC MATERIALS UNDER PRESSURE OR NON PRESSURE
Loren Hale, 3703 E. 36th St. N., Tulsa, Okla.
Continuation of application Ser. No. 651,345, June 19, 1967, now abandoned. This application Dec. 23, 1968, Ser. No. 800,309
Int. Cl. B28c 5/00
U.S. Cl. 259—151 8 Claims

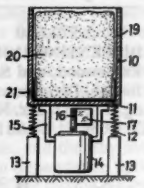


A gun for cement and similar plastic materials which are mixed and dispensed under option wet or dry mix or pressure or nonpressure conditions and discharged from a mixing vat by a reversible rotor-stator pump to a nozzle.

3,572,653
APPARATUS TO LOOSEN COMPOUNDS, ESPECIALLY MOLDING-AND CORE SANDS FOR FOUNDRIES
Dietmar Boenisch, Haselsteig 11, Aachen, Germany
Filed Mar. 7, 1968, Ser. No. 711,296
Claims priority, application Germany, Mar. 10, 1967, B91549
Int. Cl. B28c 5/18
U.S. Cl. 259—174 24 Claims

Apparatus for treating a material such as foundry sand to maintain the same in a loose condition for various treatments such as preparation, cooling or transporting the same including a container for the material having a sidewall portion with vibrating means operatively associated with the container to swing the sidewall portion generally perpendicular to the longitudinal axis of the container in rotational vibra-

tions of an amplitude and frequency such that the material within the container moves away from the sidewall portion to



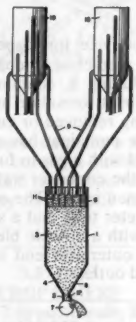
define an annular space between the material and the sidewall.

3,572,654

APPARATUS FOR THE CONTINUOUS SELF-REGULATING GRAVITY-FLOW MIXING OF POURABLE GRANULAR MATERIAL

Friedrich Jaeger, Bad Hersfeld, Germany, assignor to Glanzstoff A G, Wuppertal, Germany

Filed May 6, 1969, Ser. No. 822,184
Claims priority, application Germany, May 10, 1968, P 17 56 344.9
Int. Cl. B01f 5/00
U.S. Cl. 259—180 8 Claims



A combination of apparatus for the continuous, self-regulating, gravity-flow mixing of different component streams of a pourable or flowing granular material wherein a plurality of individual discharge conduits from different supply vessels and/or supply zones open into a grid of feed compartments at the upper end of a vertical receiving container of rectangular cross section having a unidimensionally narrowing discharge zone terminating in a discharge slot at the lower end of the container and an unobstructed stabilizing zone interconnecting the discharge zone with the feed compartments, with means to adjust the flow of granular material through the discharge slot.

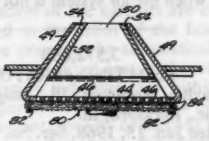
3,572,655

POLLUTED AIR ABATEMENT DEVICE

John E. Brown, 6601 S. Whipple St., Chicago, Ill.

Filed Sept. 2, 1969, Ser. No. 854,384
Int. Cl. B01f 3/04
U.S. Cl. 261—21 13 Claims

A polluted air abatement device including a closed tank partially filled with liquid and having a flue at each end, a number of baffles dividing the portion of the tank above the liquid into separate compartments, a sprayer head in each baffle offset from the sprayer heads in adjacent baffles and having a plurality of polluted air orifices, elongated spray orifices in each sprayer head positioned to provide a converging spray in the direction of flow of polluted air through the compartments, a nozzle in each compartment to direct a stream of liquid toward the polluted air orifices of the sprayer head in that compartment, and a recirculating pump



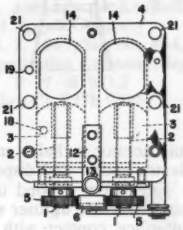
assembly to pump filtered liquid from the tank to the sprayer heads and sprayer nozzles.

3,572,656

VALVE MECHANISM IN CARBURETOR FOR CAR

Takakazu Oshima, No. 423;Saido-cho-Mirami-Ku, Yokohama-shi, Japan

Filed Aug. 28, 1968, Ser. No. 755,981
Int. Cl. F02m 9/12
U.S. Cl. 261—23 3 Claims



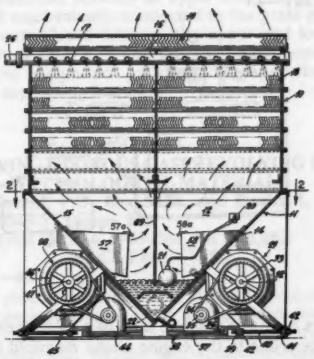
A valve mechanism in a liquid gas carburetor for use in car, in which a pair of valve driving axles arranged symmetrically in juxtaposition are each provided with a reverse screw, with a plate valve being screwed thereto, and in which a cogwheel secured to an end of each of said valve driving axles is rotated by a rack so as to simultaneously slidingly open and close the plate valves screwed to the valve driving axles in a plate casing.

3,572,657

WATER BAFFLE

Wilson E. Bradley, Jr., Ellicott City, Md., assignor to Baltimore Aircoil Company, Inc., Baltimore, Md.

Filed June 4, 1969, Ser. No. 830,256
Int. Cl. B01f 3/04
U.S. Cl. 261—30 5 Claims



A blow-through evaporative heat exchange apparatus having a blower section with a wet deck section above it and

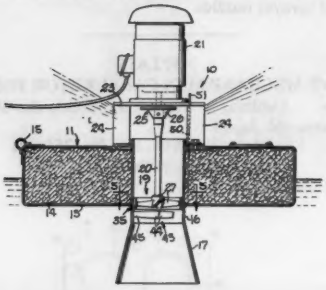
water baffles on the air fan ducts to prevent water from entering the fans when the air system is not being used.

3,572,658

FLOATING AERATOR

Richard B. Ravitts, Rockford, Ill., assignor to Richards of Rockford, Inc., Rockford, Ill.

Filed Jan. 15, 1968, Ser. No. 697,681
Int. Cl. B01f *5/12, 3/04;* **C02c** *5/00*
U.S. Cl. 261—36 **10 Claims**



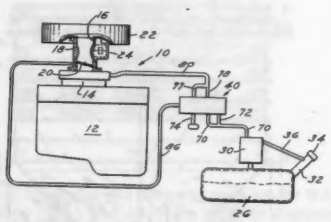
A floating liquid aerator includes an axial flow propeller rotated by an electric motor and disposed within a tubular throat to pump water from a pond upwardly through the throat and against a rotatable diffuser which slings the water outwardly for interface contact with the surrounding atmosphere. Telescoped into the throat and over the propeller is a tubular ring duct which divides the upwardly flowing column of water into a central core and a surrounding outer cylinder to prevent the formation of a vortex within the throat and thereby increase the pumping efficiency of the aerator. More nearly laminar flow across the propeller is produced by a series of stationary infuser vanes positioned beneath the ring duct to feed the inflowing water inwardly to the propeller at a controlled angle. Increased transfer of oxygen to the water is achieved by introducing air into the upwardly flowing water, the air being admitted into the outer cylinder of water in the area of the ring duct to avoid cavitation at the propeller.

3,572,659

FUEL TANK VAPOR RECOVERY CONTROL

Kazimieras Kizlauskas, Southfield, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Sept. 3, 1968, Ser. No. 756,781
Int. Cl. F02m *37/02*
U.S. Cl. 261—43 **7 Claims**



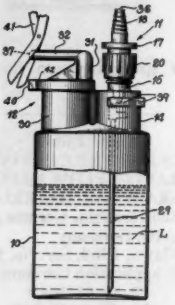
Vapors from the gasoline tank of a motor vehicle are connected by a line to the engine intake manifold to be burned. The line contains a fuel-air mixing valve that is opened by fuel tank vapor pressure to add air in the correct proportion to the fuel vapors so that the overall air-fuel ratio in the engine is unaffected by the addition of more fuel. A vacuum override to shut the valve is provided to prevent excessive idle speed rpm. increase.

3,572,660

DEVICE FOR DISPENSING INHALABLE FLUIDS

Thomas J. Mahon, Englewood, and Samuel Cherba, Totowa, N.J., assignors to Becton, Dickinson and Company

Filed Aug. 4, 1967, Ser. No. 660,170
Int. Cl. B05b *1/16;* **A61m** *11/02*
U.S. Cl. 261—78 **8 Claims**



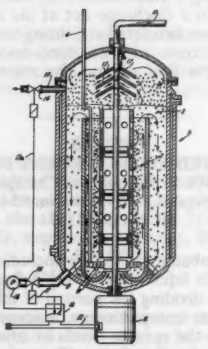
A self-containing device for dispensing inhalable fluids, such as nebulized medicinal preparations or humidified breathable gas, including a container formed of cutable plastic and a sealed inlet formation and sealed outlet formations capable of being removed or cut away to establish the inlet and outlets. The container has an assembly at the inlet for aspirating a liquid with a gas to form a spray and a baffle in conjunction with the container wall and liquid surface for nebulizing the aspirated spray. The outlet construction consists of a large diameter tube and a small diameter tube extending therefrom, with a cutable blister formation between the two tubes. The outermost end of the smaller diameter tube forms the sealed outlet.

3,572,661

ADMIXING OF GASEOUS AND LIQUID PHASES

Hans Muller, Im Allmendli 1, Erlenbach, Zurich, Switzerland

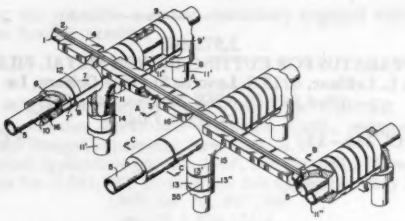
Filed Apr. 1, 1969, Ser. No. 811,752
Claims priority, application Switzerland, Apr. 4, 1968, 5026/68
Int. Cl. B01f *3/04*
U.S. Cl. 261—86 **6 Claims**



A method and an apparatus for admixing a liquid phase and a gaseous phase. A mixing vessel has a mixing chamber

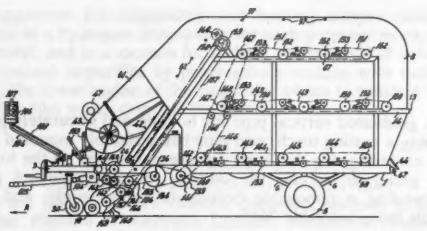
and is provided with first and second inlet means for a gaseous and a liquid phase, respectively, and with first and second outlet means for removing the liquid and gaseous phase, respectively. Mixing means including rotary means is arranged in the chamber for admixing the two phases and is subjected to encountering varying degrees of retardation of its rotation as a function of the consistency of the mixture. Control means is associated with at least one of the first inlet and outlet means and with the mixing means and serves to control the flow of the liquid phase through the respective first inlet or outlet means, and thereby the level of the liquid phase in the chamber, in dependence upon the degree of retardation encountered by the mixing means.

3,572,662
SKID RAIL SYSTEM
Earl L. Weaver, and John L. Freeman, Cook County, Ill., assignors to Dresser Industries, Inc., Dallas, Tex.
Filed May 1, 1969, Ser. No. 820,969
Int. Cl. F16l *9/14*; F27b *9/24*
U.S. Cl. 263—6B **3 Claims**



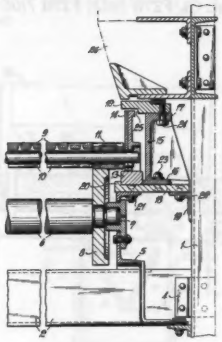
A skid rail protection system for a furnace employing a skid rail supported by crossover members and upstanding support members, the skid rail, crossover, and support members carrying a plurality of specially designed, unmortared refractory shapes.

3,572,663
CROP DRIERS
Cornelis Van Der Lely, 7 Bruschenrain, Zug, Switzerland
Filed Mar. 7, 1968, Ser. No. 711,450
Claims priority, application Netherlands, Mar. 17, 1967, 6,704,006
Int. Cl. F27b *3/00*
U.S. Cl. 263—21 **15 Claims**



A mobile crop drier wherein cut crop is gathered, crushed and conveyed obliquely into a large housing wherein a stream of air is introduced which is mixed with and heated by combustion products from a burner, the mixture of hot, gaseous material impinging on the conveyed crop in the forward upper interior of the housing and thereafter carrying it through a serpentine path in the housing for final discharge through the lower rear part of such housing. A series of rotating ejectors continuously underlie said path and toss the heavier, more moist crop back into the stream of hot, gaseous material at a selected angle which may be manually or automatically controlled responsive to the temperature of the stream at the particular location in the path. Also, the speed and direction of rotation of the ejectors are controllable. A cab may be mounted in the front of the housing and the operative speed of the drier may be automatically adjusted to accommodate the quantity of cut crop gathered by the drier. Controls and temperature indicators are within manual and visual range of the operator. A mobile wafer press combined with a receptacle is advantageously connected to the housing to receive and press wafers from the warm dried crop discharged from the housing, said wafer press including a receptacle to store wafers therefrom. The receptacle has a discharge conveyor for discharge of wafers therefrom. The dried crop is first pressed in a compression chamber in the wafer press which is as wide as the swath of crop lying on the ground and knives thereafter cut such initial compressed crop into wafers which have approximately square cross sections.

3,572,664
SINTER GRATE
Fritz Muller, Knapsack nr. Cologne; Winfried Schmidt, Kendenich nr. Cologne, and Hugo Werner, Hermulheim nr. Cologne, Germany, assignors to Knapsack Aktiengesellschaft, Knapsack bei Cologne, Germany
Filed Sept. 2, 1969, Ser. No. 854,391
Claims priority, application Germany, Sept. 11, 1968, P 17 58 983.2
Int. Cl. F27b *9/00*
U.S. Cl. 263—28 **6 Claims**

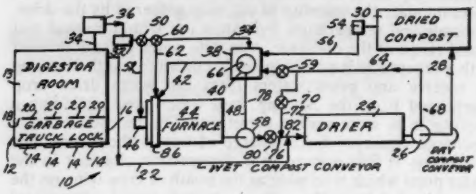


Apparatus for the drying, calcining and sintering of ores, minerals and similar materials. The apparatus is comprised of a grate which is arranged to be drawn by chains, to be supported by bearing rollers and is laterally bounded by sideplates positioned between an upper slide bar and a lower slide bar and mechanically connected to the grate plate, and sealing elements placed between the upper and lower slide bars. The lower slide bars and the sealing elements are arranged to be supported by common supporting plates secured to a supporting frame.

3,572,665
DESTROYING ODOROUS GASES EVOLVING FROM WET BIOLOGICAL MATERIAL
Daniel B. Vincent, P.O. Box 5478, and Daniel A. Vincent, P.O. Box 5045-Y, Tampa, Fla.
Filed Oct. 14, 1969, Ser. No. 866,262
Int. Cl. F26b *17/00*
U.S. Cl. 263—40 **7 Claims**

Ways and means are provided for destroying odorous components of gases released from garbage and food waste byproduct processing plants during receiving, storage and processing operations. Destruction is accomplished by collecting all such odorous gases and cycling them through a high temperature region, raising them to an odor-destroying temperature, of e.g. 1300° F., before releasing them to the at-

mosphere. Where wet composted material is to be dried in the plant, some of the gases are utilized in a direct contact dryer. The gases utilized in the dryer are preheated by in-

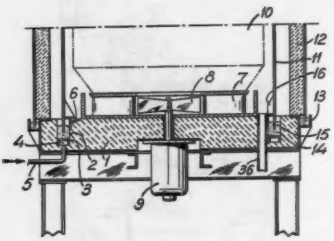


direct heat exchange with the deodorized gases, thus lowering the temperature of the exhausted, deodorized gases, to e.g. 600° F.

3,572,666
SAND SEAL

Pier N. Fehr, Milan, Italy, assignor to S. A. Heurtey, Paris, France

Filed Apr. 29, 1969, Ser. No. 821,169
Claims priority, application France, May 8, 1968, PV150963
Int. Cl. F27b 3/02; F27d 7/00
U.S. Cl. 263—47 **11 Claims**



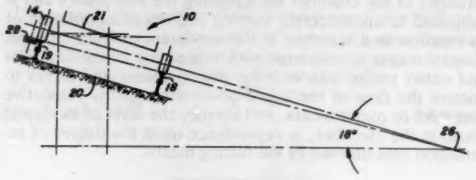
A seal for providing a substantially gastight connection between separable elements of a structure, such as a furnace base and a charge-enclosing bell or cover supported thereon, comprising a trough formed in one of said elements, a body of granular material such as sand in said trough, a fin or apron on the other of said elements and adapted to extend into said trough when the elements are assembled, and means for fluidizing the body of granular material in the trough while the apron is being inserted thereinto and, if desired, while it is being removed therefrom.

3,572,667
CIRCULAR TRAVELING GRATE MACHINE OR THE LIKE

Rudolf Hess, Frankfurt-Main, and Horst Seidel, Bischofsheim, Germany, assignors to Dravo Corporation, Pittsburgh, Pa.

Filed Oct. 10, 1968, Ser. No. 766,481
Claims priority, application Germany, Oct. 21, 1967, P 15 83 474.9
Int. Cl. F27b 21/02
U.S. Cl. 266—21 **8 Claims**

A circular traveling grate machine comprising an annular series of segment-shaped carriages is disclosed. Each of the carriages has inner and outer wheels and concentric inner and outer tracks are provided on which the inner and outer

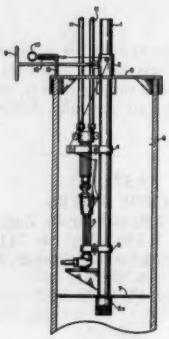


wheels respectively roll. The outer track is elevated above the inner one such that the surfaces of the carriages slope downwardly to the center of the machine.

3,572,668
APPARATUS FOR CUTTING DRIVEN METAL PILING

Irvin L. LeBlanc, 6215 S. Laverne St., New Orleans, La.

Filed July 19, 1968, Ser. No. 746,207
Int. Cl. B23k 7/04
U.S. Cl. 266—23 **3 Claims**



A graduated vertical pipe for holding and accurately positioning a cutting torch, said pipe being slidably mounted in a top centering ring that is mountable in rotation on the top of the piling to be cut, the bottom of said graduated pipe suspending a removable bottom centering guide, and the whole being rotatable 360°.

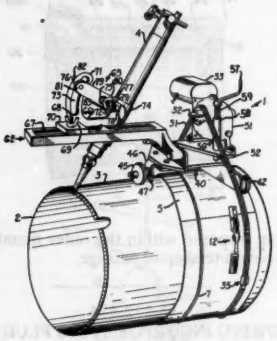
3,572,669
PIPE BEVELING MACHINE

Daniel Brand, 5207 S. Oxford, Tulsa, Okla.

Filed Aug. 19, 1968, Ser. No. 753,519
Int. Cl. B23k 7/06, 7/10
U.S. Cl. 266—23 **4 Claims**

A pipe beveling machine travels around a track on an elongate band secured in encircling relation on a pipe to be cut adjacent the line of cut. The machine moves through engagement of a rotatable member with an endless flexible member encircling the pipe. A cutting torch is adjustably mounted on

a bracket extending outwardly from a carriage which pivotally supports a platform having drive means thereon



turning the rotatable member operatively engaged with the endless flexible member.

3,572,670

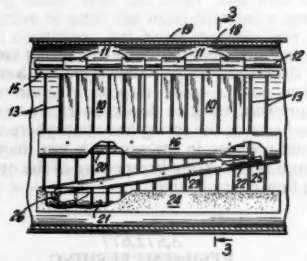
PURIFICATION OF ELECTROLYTIC COPPER

Thomas Gordon Hart, San Francisco, Calif., assignor to Phelps Dodge Corporation, New York, N.Y.

Original application Apr. 26, 1966, Ser. No. 551,828, now Patent No. 3,501,292. Divided and this application May 26, 1969, Ser. No. 847,760

Int. Cl. C22b *15/14*

U.S. Cl. 266—33 8 Claims



Apparatus for suspending and heating copper cathode plates in a hydrogen atmosphere for such purposes as oxygen removal, and in a vacuum for melting and removal of volatile or gaseous impurities by progressively melting with radiant heat the lower region of the suspended plates to create a thin molten film which drips off the plates.

3,572,671

CONTINUOUS DEGASSING OF METALS

Howard Knox Worner, Victoria, Australia, assignor to Conzinc Riotinto of Australia Limited, Melbourne, Victoria, Australia

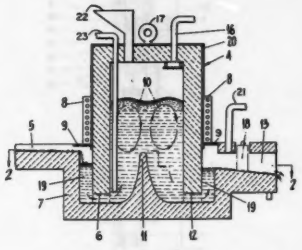
Filed Oct. 1, 1968, Ser. No. 775,973

Claims priority, application Australia, Oct. 3, 1967, 27983/67

Int. Cl. C21c *7/00*

U.S. Cl. 266—34 14 Claims

Method for continuously and simultaneously degassing, deoxidizing or desulfurizing of molten metallic material by flowing the material into a removable bell jar-like chamber placed over a dishlike refractory tank bottom while keeping the chamber under reduced pressure and then upwardly over a baffle projecting up into the chamber and electroinductively stirring the upper part of the material in the chamber and flowing it in degassed condition downward and out of the chamber by gravity. The degassing apparatus is a removable bell jar-like chamber placed over a dishlike refractory tank with an upwardly directed baffle to deflect the crossflow of



molten metal, the chamber having an inlet and an outlet aperture on opposite sides of the lower rim and external electroinductive stirring coils around its midportion the roof of the chamber is provided with a vacuum line.

3,572,672

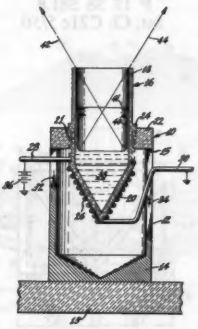
VACUUM EVAPORATION APPARATUS

Abraham Harel, Trenton, N.J., assignor to RCA Corporation

Filed Nov. 22, 1968, Ser. No. 778,130

Int. Cl. C23c *13/12*

U.S. Cl. 266—34 4 Claims



A crucible for holding a quantity of material to be evaporated in a vacuum evaporation system includes an elongated tubular upper portion and a heat shield to confine heat to the lower portion of the crucible so that the upper portion remains cooler than the lower portion. This prevents overflowing and serves to collimate the evaporant.

3,572,673

APPARATUS FOR DISSOLVING ALKALI METALS

Albert Bryan Houghton, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

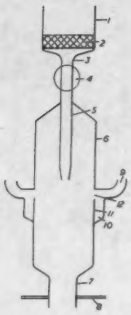
Continuation of application Ser. No. 500,069, Oct. 21, 1965, now abandoned. This application July 3, 1969, Ser. No. 845,622

Int. Cl. C21c *7/00*

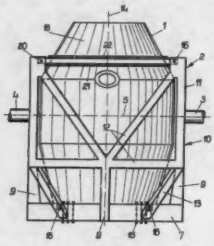
U.S. Cl. 266—34 1 Claim

Apparatus for dissolving molten solids in solvent liquids. The invention, which is especially useful for dissolving alkali metal in liquid ammonia, includes an inlet device for feeding the molten material into a dissolver vessel, the device com-

prising a feed pipe having means for irrigating the pipe's internal walls with a solvent liquid. The process involves dissolving the molten material by feeding the same to the dissolver vessel through the inlet device while the latter is irrigated with the solvent.



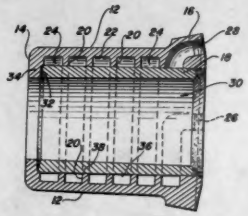
3,572,674
TILTABLE SUPPORT FRAME FOR A METALLURGICAL VESSEL
Friedrich Wilhelm Bornscheuer, Stuttgart-Botnang, Germany, assignor to Demag AG, Duisburg, Germany
Filed May 15, 1969, Ser. No. 824,839
Claims priority, application Germany, June 29, 1968, P 17 58 581.8
Int. Cl. C21c *5/50*
U.S. Cl. 266—36 **21 Claims**



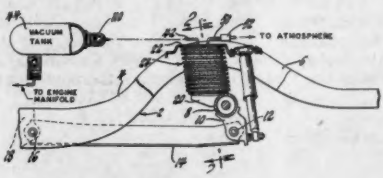
A tiltable frame structure for supporting a metallurgical converter. The frame structure is spaced from the converter to permit it to deform under thermal stress without restriction. The converter is secured within the frame by a plurality of flexible support rods. Preferably, the support rods are prestressed and extend in a direction perpendicular to one of the directions in which the converter deforms under thermal stress.

3,572,675
HIGH VELOCITY MULTIPIECE TUYERE AND METHOD OF CONSTRUCTING SAME
Lawrence G. Maloney, Munster, Ind., assignor to Inland Steel Company, Chicago, Ill.
Filed May 7, 1969, Ser. No. 822,371
Int. Cl. C21b *7/16*
U.S. Cl. 266—41 **6 Claims**

A high velocity tuyere having an outer member made of a first material, and formed with ribs and passageways, and an inner member made of a second material having a lower heat transfer coefficient than the outer member, the inner member being disposed within the outer member to provide a leak-free convolute-shaped passage.

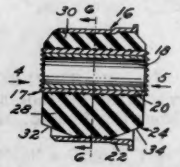


3,572,676
FLUID SPRING INCORPORATING FLUID MEDIUM CONSERVING FLOW CONTROL MEANS
Ming-Chih Yew, Utica, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Dec. 23, 1968, Ser. No. 785,946
Int. Cl. B60g *17/04*
U.S. Cl. 267—34 **12 Claims**



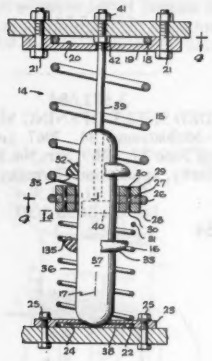
A fluid pressure energized auxiliary spring connected to a source of fluid pressure by conduit means having a height sensing flow control valve disposed therein which incorporates a pressure sensitive device operative to disable communication between the spring and atmosphere whenever the level of fluid pressure in the source is less than the level of fluid pressure in the spring irrespective of the operating position of the flow control valve.

3,572,677
RESILIENT BUSHING
James J. Damon, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Dec. 11, 1968, Ser. No. 782,949
Int. Cl. F16f *1/38*
U.S. Cl. 267—57.1 **9 Claims**



A resilient pivot device which, in its presently preferred embodiment, is constructed to pivotally connect a vehicle suspension member to a vehicle body. The pivot device includes a resilient body that presents greater resistance to linear movement of the suspension member in one direction than to linear displacement in the opposite direction. When used in a vehicle suspension system, the unequal resiliency prevents a resonant condition from developing that might cause vehicle body shake.

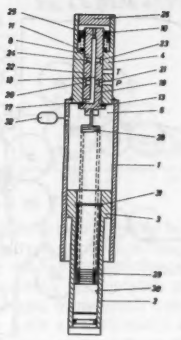
3,572,678
OVERLOAD SPRING STRUCTURE
Joseph Jerz, Jr., 131 Wylerhorn St., Crestline, Calif.
Filed Oct. 17, 1968, Ser. No. 768,345
Int. Cl. B60g 11/02
U.S. Cl. 267—60 12 Claims



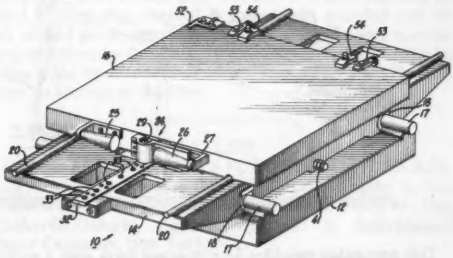
An overload spring assembly for a vehicle, including two coil springs or spring sections interposed between the sprung and unsprung masses of the vehicle, with one of the two springs being stiffer than the other, and with the springs being ineffective to assist the main suspension system under normal load conditions, but being movable into supporting relation under a predetermined overload condition. Stops associated with the springs, and preferably carried by a shock absorber within the interior of the springs, cause the springs when they do become effective to produce first a soft supporting action, and then a stiffer action dependent only upon the characteristics of the stiffer spring, with the stops preferably also serving in an extended or rebound condition to resiliently limit the separation of the sprung and unsprung masses.

3,572,679
HYDRO-PNEUMATIC OLEO STRUT OR SUSPENSION ASSEMBLAGE PROVIDED WITH LEVEL REGULATING MEANS LOCATED WITHIN THE CYLINDER HOUSING
Gunter Strauff, Kaarst, Germany, assignor to Langen & Co., Dusseldorf, Germany
Filed Nov. 20, 1968, Ser. No. 777,398
Claims priority, application Germany, Dec. 15, 1967, P 16 30 752.1
Int. Cl. F16f 5/00
U.S. Cl. 267—64 2 Claims

A hydropneumatic oleo strut or suspension assemblage adapted to be arranged between a wheel supporting means and a vehicle body in which the cylinder casing has located therein a level regulating means. The level regulating means is defined by a multiple way valve and which valve, dependent upon the relative position of the piston rod and cylinder, establishes in a first regulating position a fluid path between a pressure line or conduit which leads to the piston space and in a second regulating position a fluid path in a line leading between the piston space and a drain line or conduit. In a third regulating position, namely, a neutral position, the multiple way valve blocks the aforesaid fluid paths and a continuously operative spring means serves to move the control piston of the multiple way valve into a position which corresponds to the first regulating position, whereas an extension spring means operative only within a certain stroke range related to the piston or piston rod serves to move the control piston into the second regulating position in opposition to the force of the spring means.



3,572,680
MACHINE TOOL TABLE
Frederick R. Neff, 2993 Curtis Ave. D26, Des Plaines, Ill.
Filed Mar. 28, 1968, Ser. No. 716,958
Int. Cl. B25b 11/00
U.S. Cl. 269—8 10 Claims

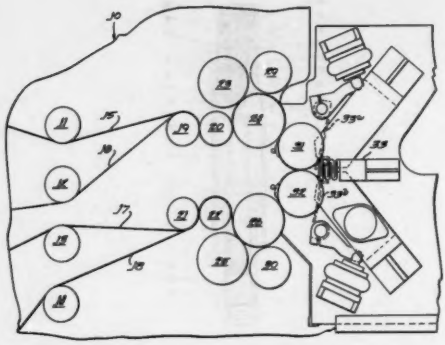


There is provided a machine tool table adapted for multiple positioning in a horizontal plane. The table includes a base member, an intermediate table member mounted for movement in a first horizontal direction on the base member, and an upper table member mounted for horizontal movement on the intermediate table member in a second or transverse horizontal direction. Locating means are provided for positioning the upper table member in a plurality of positions relative to the intermediate table. Moreover there is provided electromagnetic means for securely locking the upper table member relative to the intermediate table member in each of the selected plurality of positions.

3,572,681
APPARATUS FOR INTERFOLDING WEBS
Ernst Daniel Nystrand, Green Bay, Wis., assignor to Paper Converting Machine Company, Inc., Green Bay, Wis.
Filed June 3, 1969, Ser. No. 829,874
Int. Cl. B65h 45/24
U.S. Cl. 270—39 2 Claims

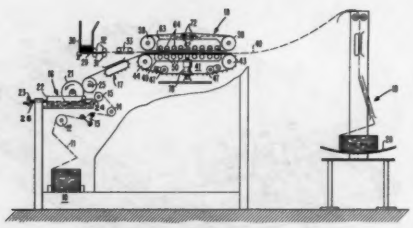
Folding apparatus for V-interfolded towels and the like in which transfer of severed webs is made directly from the cu-

toff bedroll to the gripper and tucker-equipped folding rolls, the tuckers being equipped with vacuum-actuated tips and



the grippers being housed within the folding rolls to provide pockets for the accommodation of slack webbing.

3,572,682
CONTINUOUS MOTION CARD AND WEB ASSEMBLY APPARATUS
David W. Leach, and Thonas W. McGrath, Trenton, N.J., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Nov. 6, 1968, Ser. No. 773,931
Int. Cl. B65h *39/14*
U.S. Cl. 270—52 **9 Claims**



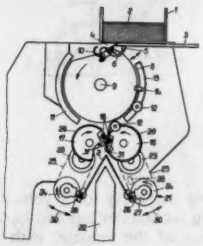
This apparatus provides a continuous form with a series of precut, longitudinally spaced record cards adhered thereto so as to be movable by conventional forms tractors through a high-speed printer. The cards have detachable marginal stub portions that are glued to the form by a heat-settable glue. After glue is applied to the form, the cards are fed onto the form. The card/form assemblage is then advanced through an elongated nip between two sets of opposing endless belts, at least one of the belts of each set being heated, to subject the assemblage to heat and pressure for a period of time proportional to the length of the nip and speed of the belts to set and dry the glue so as reliably to seal the cards to the form. Application of the glue to the form and of the cards to the glue is performed while the form and cards are in continuous motion, providing a high throughput.

3,572,683
DEVICES FOR SEPARATING FOLDED SHEETS OF PAPER AND THE LIKE
Rudolf Hepp, Schmidt-Ott-Strasse 7a, 1 Berlin 41, Germany
Filed Dec. 13, 1968, Ser. No. 783,593
Claims priority, application Germany, Apr. 19, 1968, P 17 61 209.8
Int. Cl. B65h *5/30*
U.S. Cl. 270—54 **5 Claims**

The present invention relates to a device for parting folded sheets of material, or assemblies of such sheets, in a manner such that where there are more than two leaves or pages in the assembly the internally disposed ones may also be parted

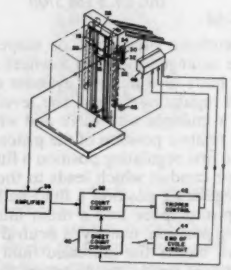
in a determinate manner by the creation in them of a bending stress consequent upon the intermittent introduction between them of a separator element.

3,572,684
FOLDED SHEET-OPENING MACHINE
Rudolf Gorig, Muhlstrasse 34, 7067 Grunbach, Germany
Filed June 27, 1969, Ser. No. 837,020
Claims priority, application Germany, July 5, 1968, P 17 61 771.9
Int. Cl. B65h *5/30*
U.S. Cl. 270—54 **16 Claims**



Folded sheets are stacked on a stack magazine. A suction head locates the bottom sheet in position to be gripped by a pulling drum and the gripped sheet is conveyed around the periphery of the drum until the edge of the folded sheet engages a stopping means which prevents further conveyance of the sheet. Then, a pair of suction rollers located below the pulling drum engage the other end of the sheet and conduct the sheet therebetween and separate the ends of the sheet, thereby opening the sheet. A clamp-grab mechanism arranged below the suction rollers then grips the separated ends of the sheet and places the opened sheet upon a sheet-receiving saddle.

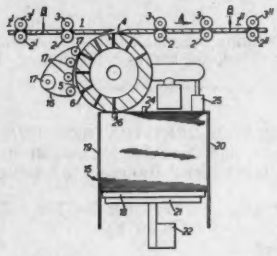
3,572,685
SHEET COLLATOR SYSTEM
Donald L. Snellman, and Richard A. Marsen, Seattle, Wash., assignors to Norlin, Inc., Seattle, Wash.
Filed July 3, 1967, Ser. No. 650,856
Int. Cl. B65h *39/02*
U.S. Cl. 270—58 **10 Claims**



Sheet material is delivered seriatim from a distributor to a receiver at any of a plurality of stations in predetermined

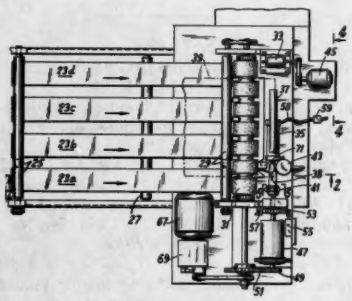
number and to a predetermined sequence of stations in accordance with sequentially recorded information that is advanced in synchronism with the sequential station-to-station progression of the distributor.

3,572,686
SHEET ASSOCIATING DEVICE HAVING ROTARY PNEUMATIC SEPARATORS
Alan K. Day, Ilford, England, assignor to The Plessey Company Limited, Ilford, England
Filed Aug. 15, 1968, Ser. No. 752,836
Claims priority, application Great Britain, Aug. 16, 1967, 37,756/67
Int. Cl. B65h *39/02, 3/10*
U.S. Cl. 270—58 8 Claims



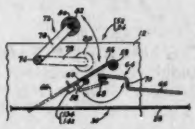
To feed assorted documents in a predetermined order to an in-line conveyor track, individual modular sections of a stationary track having drive rollers for the paper are each provided with a feed throat to which documents from the top of a stack contained in a magazine are fed by a continuously rotating suction drum in which a valve restricts suction to the upwardly moving side while a solenoid valve applies suction only at the time when the supply of a document from the hopper in question is required.

3,572,687
APPARATUS FOR FOLDING SHEETED ARTICLES
Donald C. Lindley, Tulsa, Okla., assignor to Poly-version, Inc., Tulsa, Okla.
Filed Mar. 12, 1968, Ser. No. 712,551
Int. Cl. B65h *45/00*
U.S. Cl. 270—61 5 Claims



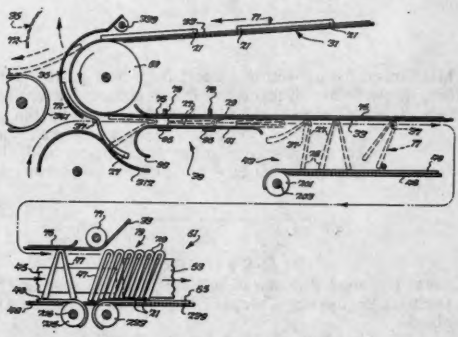
Device for multiple folding various length sheets of flat material, utilizing a slotted rotating mandrel and flattening rollers to first roll and then flatten the sheets to form the folds.

3,572,688
FINAL FOLDER FOR FLATWORK
Dan D. Mazzolla, 2464 Raleigh Drive, York, Pa.
Filed Nov. 6, 1968, Ser. No. 773,766
Int. Cl. B65h *45/10*
U.S. Cl. 270—68 2 Claims



A flatwork final folder arranged to be used with a preliminary folder of the type capable of folding a flatwork piece such as a sheet or the like into an elongated arrangement of a multiplicity of overlying similar plies and then folding said elongated arrangement transversely onto itself a plurality of times in order to form a substantially square configuration, said final folder being arranged to receive said substantially square folded flatwork piece from said preliminary folder in a position wherein the leading edge is completely rounded while the trailing edge consists of a pair of overlapping ends lowermost and another rounded edge overlying the same, said final folder comprising a conveyor, a first manipulating means and a second manipulating means spaced longitudinally along said conveyor, said manipulating means being similar and each including in combination, a stationary anvil, a clamping member, retractable guide means, power means to operate said clamping member and guide means, and control means for said power means actuated by advancing flatwork pieces and adjusted and arranged to cause the first manipulating means to completely reverse the flatwork piece to dispose the entirely rounded, initial leading edge thereof so as to be the trailing edge and the second manipulating means being arranged to fold the substantially square flatwork piece about a transverse axis and in a direction that the folded leading edge thereof is completely rounded and the ends of said piece are sandwiched between trailing rounded edges and thereby facilitate the engagement of said rounded leading edge by an operator in stacking said folded flatwork pieces for storage or the like.

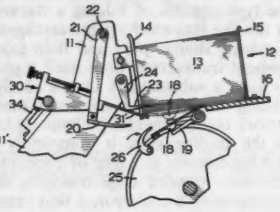
3,572,689
METHOD AND APPARATUS FOR FOLDING ARTICLES
James A. Murphy, Toronto,Ontario, Canada; Charles A. Lee; Warren R. Furbeck, Knoxville, Tenn., and Philip G. Day, Cooksville,Ontario, Canada, assignors to International Paper Company, New York, N.Y.
Filed July 11, 1968, Ser. No. 744,009
Int. Cl. B65h *45/16*
U.S. Cl. 270—70 13 Claims



A series of flat articles are advanced along a path at regular intervals and are folded by continuously traveling fingers

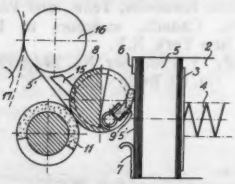
which engage an article intermediate its ends and fold the same. The fingers advance the articles to a station at which the folded articles are deposited as the fingers automatically withdraw from the folds. The folded articles may be abutted seriatim into a stack within an accumulator in the form of a conveyor traveling a speed considerably slower than the speed of the traveling fingers.

3,572,690
STUFFING MACHINE ATTACHMENT
Philip T. Lillie, 3 Quinby Court, Rexdale, Ontario, Canada
Filed Jan. 24, 1969, Ser. No. 793,867
Int. Cl. B65h *1/06, 5/08*
U.S. Cl. 271—19 **1 Claim**



A stuffing machine attachment comprises a rigid support block which is universally adjustable in position with respect to the stuffing machine, and a resilient blade carried by the support block, the blade having a free unsupported end which is adapted to engage the bottom edge of a stack of inserts. The blade is located in a guideway provided in the support block and is adjustable therealong for varying the effective length of the free, unsupported portion of the blade.

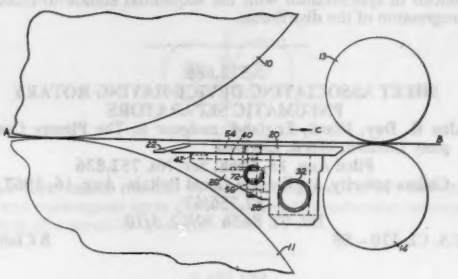
3,572,691
MECHANISM FOR WITHDRAWING INDIVIDUAL SHEETS OF PAPER FROM A STACK
Gustav Heinricy, Toronto, Ontario, Canada, assignor to Canadian Stackpole Limited
Filed Oct. 28, 1968, Ser. No. 770,923
Claims priority, application Denmark, Nov. 1, 1967, 5,445/67
Int. Cl. B65h *3/02;* **B65c** *9/12*
U.S. Cl. 271—23 **13 Claims**



Mechanism for delivering a sheet from a magazine comprising a resiliently displaceable finger carried on a roller which wipes one edge of the foremost sheet from behind an edge of the magazine to drop into a recess in the roller behind the finger, and a second roller to cooperate with the first roller to grip the sheet edge and pull the sheet from the magazine.

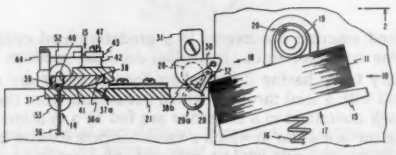
3,572,692
BLANK FEEDERS
Thomas Desmond Bishop, Solihull, England, assignor to The Deritend Engineering Company Limited, Birmingham, England
Filed Feb. 17, 1969, Ser. No. 799,683
Int. Cl. B65h *3/08*
U.S. Cl. 271—26 **2 Claims**

The invention provides a feeder for thin card or like blanks having a table over which the blanks travel and with air jets for preventing the blank moving one way and also suction



means for preventing the blank moving the other way, the two combining to hold the blanks in the desired plane.

3,572,693
CARD STOP-REGISTRATION DEVICE
Curtis A. Larson, and Donald J. Wanek, Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 23, 1968, Ser. No. 786,167
Int. Cl. B65h *9/06*
U.S. Cl. 271—60 **8 Claims**

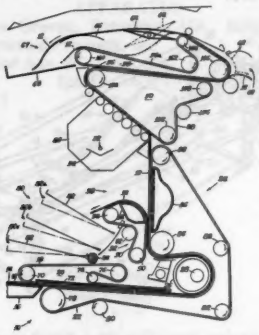


A document card positioning mechanism for accurately locating a moving document card at a predetermined station in its path of movement including a card stop movable into engagement with a stationary plate defining one boundary of the path of card movement with the stop having a slanted surface on which the leading edge of the card abuts, and a pivoted wedge element movable out of the path of card movement by the card as it passes along said path toward said stop and movable back into the path of card travel so as to wedge against the trailing edge of the card and hold it forcefully in engagement with the slanted stop surface.

3,572,694
SHEET- AND WEB-HANDLING ASSEMBLY FOR COPYING MACHINE
Frederick G. Wilde, Fairport, and L. Gordon Booth, Rochester, N.Y., assignors to Addressograph-Multigraph Corporation, Mount Prospect, Ill.
Original application Sept. 18, 1967, Ser. No. 683,421, now Patent No. 3,464,690, which is a division of application Ser. No. 415,540, Dec. 2, 1964, now Patent No. 3,362,314. Divided and this application Mar. 10, 1969, Ser. No. 805,443
Int. Cl. B65h *29/60*
U.S. Cl. 271—64 **9 Claims**

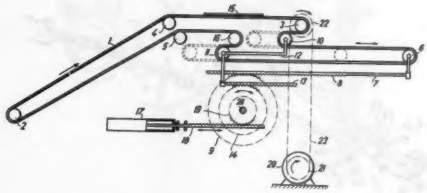
The application discloses a diazo copying machine using various lengths of original material and copy material. A first conveying means moves the copy and original material past an exposing station to a separating station in a superimposed relation. The separated original material from the separating station is discharged into an original material receiver which can be variously positioned on the apparatus to either receive lengths of original material or to roll up long lengths of original material. The separated copy material is moved past

a developing station and discharged at a first outlet or is selectively moved over two different paths to a copy receiver at a second outlet. This movement of the copy material is



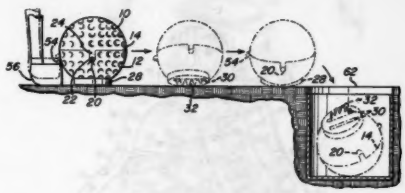
controlled by the settings of gates in the copy material conveying path. These controls permit use of the copying machine with original and copy material of varying lengths.

3,572,695
CONVEYOR FOR TRANSPORTING AND DEPOSITING FLEXIBLE SHEET MATERIAL
Vladislav Janirek, Gottwaldov, and Zdenek Miculka, Otrokovice, Czechoslovakia, assignors to Strojosvit, narodni podnik, Krnov, Czechoslovakia
Filed May 29, 1969, Ser. No. 828,998
Int. Cl. B65h *29/36*
U.S. Cl. 271—78 **9 Claims**



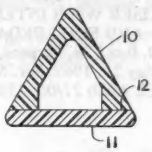
A conveyor for transporting flexible sheet material and depositing the same at a predetermined location includes an endless conveyor belt and a plurality of rollers around which the belt is guided. At least one of these rollers is driven by a suitable drive means while another of the rollers forms a delivery roller situated at an end of the endless belt where the sheet material which has been transported by the belt leaves the latter to be deposited at the predetermined location. A first shifting structure is operatively connected with the delivery roller for shifting the latter back and forth at a linear speed equal to the linear speed of movement of the conveyor belt itself. The rollers include an even number of length-compensating rollers around which length-compensating loops of the belt are guided to compensate for the extension and contraction of the belt required by the back-and-forth movement of the delivery roller. The length-compensating rollers are also shifted back and forth, but by a second shifting structure which shifts the length-compensating rollers at a speed equal to the quotient of the linear shifting speed of the delivery roller divided by the number of length-compensating rollers.

3,572,696
WALKING GOLF BALL
Donald B. Poynter, 7 Arcadia Place, Cincinnati, Ohio
Filed July 17, 1968, Ser. No. 745,605
Int. Cl. A63b *43/00*
U.S. Cl. 272—27 **6 Claims**



The walking golf ball comprises a spherical hollow casing containing a motor, and legs activated by the motor to cause the golf ball to advance with a walking motion toward a cup or other target selected by the player. Control of the motor preferably is by means of a small lever or the like projecting from the ball at a location of little prominence, and which may be manipulated more or less casually by the head of a golf club. The mechanism includes means for directing the ball along a generally straight course, with a deliberate side-to-side wobble.

3,572,697
POLE VAULT CROSSBAR
James A. Rappas, 101 Hampton Parkway, Kenmore, N.Y.
Filed Feb. 7, 1969, Ser. No. 797,449
Int. Cl. A63b *5/06*
U.S. Cl. 272—59 **5 Claims**

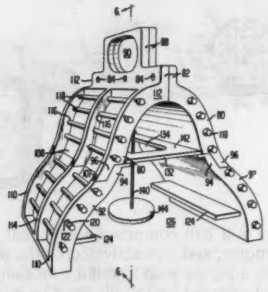


A crossbar for pole vaulting, high jumping and the like of triangular cross section is formed of two strips of synthetic resin, a generally flat base strip and an inverted V-shaped strip, the lower portions of the legs of the inverted V-shaped strip being cemented to the base strip. The crossbar is given a predetermined upward arch or camber to counteract the tendency to sag under its own weight. This may be done by cementing the two parts to each other and clamping them in an arched position while the cement is setting, or by applying a tensile stress lengthwise of the base strip and maintaining such tensile stress with the parts clamped in a straight line relationship while the cement is setting. In the latter case release of the clamping pressure causes the composite crossbar to assume an upwardly cambered form, due to internal tensile-compressive stress equilibrium.

3,572,698
PLAYGROUND SHELTER
Colin Greenly, 1153 Bellview Road, McLean, Va.
Filed June 5, 1968, Ser. No. 734,817
Int. Cl. A63b *9/00, 3/00*
U.S. Cl. 272—60 **17 Claims**

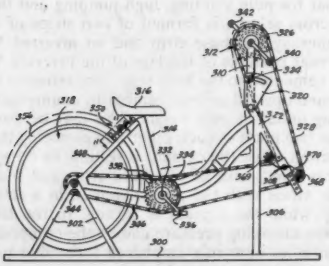
A children's playground shelter constructed of reinforced concrete, fiberglass, or the like, and formed of two mutually supporting, elongated wall members spaced apart at their lower ends and in an abutting relation at their upper ends to define a sheltered area. The external surface of the wall members is equipped with a plurality of vertically spaced handholds and foot supports to facilitate the climbing

thereon by children. Apertured vertical extensions may be provided at the juncture of the wall members to provide the opportunity for a child to crawl therethrough in ascending one of the wall members and descending the other of the wall members. The width of the juncture may be sufficient to



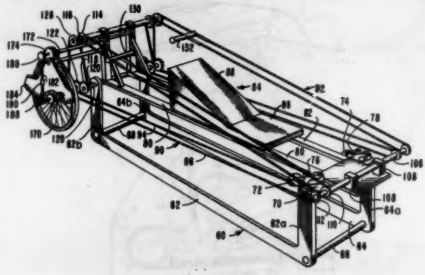
allow a child to walk thereon. Seats may be provided within the sheltered area. These seats may also be apertured to further stimulate the imagination of the child at play within the sheltered area. In an embodiment for more advanced children, an upper level or raised platform may be provided within the sheltered area to which access may be gained only by the climbing of a rope, pole, or other climbing means through an aperture in the platform. Seats may also be suspended from the climbing means which depend from one of the wall members through the aperture in the raised platform or from the platform itself.

3,572,699
BICYCLE EXERCISER WITH INTERCONNECTED HAND AND FOOT PEDALS
Harry B. Nies, P. O. Box 738, Parsons, Kans.
Filed May 21, 1969, Ser. No. 832,548
Int. Cl. A63b *21/00, 23/04, 69/16*
U.S. Cl. 272—73 **4 Claims**



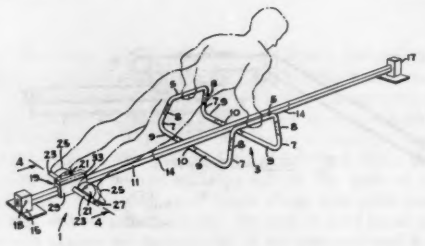
A stationary exercise device is modified to record cyclic positional information of the hand and foot operated pedals against a variable load which load level is also recorded to indicate brain damage in terms of pedal lag for either set of pedals. The apparatus may be motor driven under a specified load for a partially or totally incapacitated person for therapy for the motor brain center. Alternatively, the apparatus may be a modified conventional bicycle with a foot pedal assembly and a hand-operated pedal assembly carried in place of the handlebars. A drive chain couples the foot pedal assembly and hand pedal assembly through separate drive sprockets. The drive sprockets consist of a series of different diameter sprockets which are selectively shiftable into engagement with the drive chain.

3,572,700
FRICTONAL TYPE EXERCISING DEVICE
Joseph A. Mastropaolo, 16291 Magellan Lane, Huntington Beach, Calif.
Filed July 8, 1968, Ser. No. 743,092
Int. Cl. A63b *23/02, 23/04*
U.S. Cl. 272—79R **6 Claims**



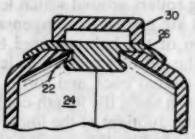
Exercising device providing time-distributed, continuously varying uses of a high proportion of body muscle masses, through individual exercise cycles employing bidirectional operation against a resistance between fully flexed and fully extended positions of the subject. Arm and body travel against the resistance successively involves agonist and antagonist musculature, the work output rate or total work output being measurable. Programs of exercises employing selected work rates and work quantities provide total body conditioning without undue strain or tendency to loss of motivation.

3,572,701
PUSH PULL TYPE EXERCISING DEVICE
Alexander Agamian, 1366 Kotenberg Ave., San Jose, Calif.
Filed May 19, 1969, Ser. No. 825,577
Int. Cl. A63b *21/00*
U.S. Cl. 272—79 **8 Claims**



An apparatus for physical exercise having a handrail support, a longitudinal guide track extending in a plane beneath and fore and aft of the handrail support, a carriage slideable along the rail and adapted to be engaged by the feet of an individual.

3,572,702
BARBELL WEIGHT
Harry M. Dorn, 1133 Broadway, Flushing, N.Y.
Filed Mar. 5, 1969, Ser. No. 804,588
Int. Cl. A63b *11/00, 11/02*
U.S. Cl. 272—84 **3 Claims**



A rubber tire to keep a filling plug in place in a hollow barbell weight filled with a weighting material through a filling

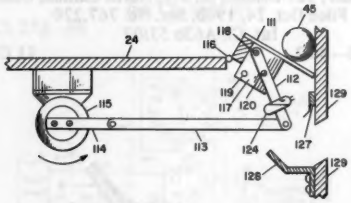
opening in the hollow weight and having a plug to close the filling opening.

3,572,703

THREE DIMENSIONAL GAME AND VENDOR APPARATUS

Henry Thomas Greene, Pasadena, Md., assignor to Chesapeake Automated Products, Inc.

Filed Apr. 25, 1968, Ser. No. 724,154
Int. Cl. A63f *9/00*
U.S. Cl. 273—1 **5 Claims**



A three dimensional game and vending apparatus with opposing cups attached to a winch mechanism with this mechanism motor controlled for movement in a horizontal plane by movement of a rotatable pair of winch drums along a square support shaft mounted on a carriage mechanism. The drums are mounted on a common horizontal axis and each drum has protruding pins which engage the pins on the other drum. A ball or capsule of merchandise is dropped by the cups on a leaf mechanism which may be adjusted for either return to the game or dispensed in a vending machine.

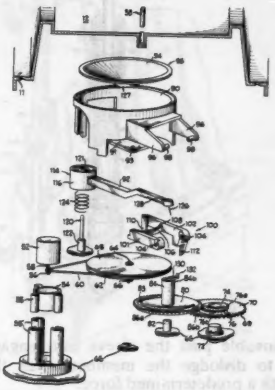
3,572,704

DEXTERITY GAME WITH PHONOGRAPH

Marvin I. Glass, Chicago, and Gunars Licitis, Lombard, Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Sept. 5, 1968, Ser. No. 757,549
Int. Cl. A63f *9/00;* **A63h** *5/00;* **G11b** *17/06*
U.S. Cl. 273—1 **9 Claims**

An electric game apparatus including a base structure housing a phonograph mechanism, and a simulated birdcage pivotally supported on the base by a center pole which extends upwardly from the base to the roof of the cage. The cage includes a comical figure, and each player in turn attempts to remove the comical figure through the bars of the cage without disturbing the balance thereof. The means for controlling the operation of the battery-powered phonograph includes contact means which is responsive to movement of the cage to actuate the phonograph and produce a sound message. The phonograph includes indexing means for shifting the tone arm from one recorded message to the next and means for returning the tone arm to the starting position on the record after all of the messages have been played.

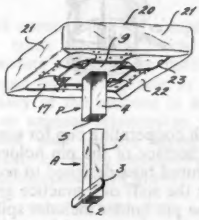


3,572,705

STRAPLESS COVERING FOR BASEBALL BASE

Bruce R. Wyble, Sikeston, Mo., assignor to Caproco, Inc., St. Louis, Mo.

Filed Nov. 8, 1968, Ser. No. 774,251
Int. Cl. A63b *69/40*
U.S. Cl. 273—25 **5 Claims**



A baseball base having a plate, a filler, and a cover which completely surrounds the filler except over a portion of the bottom, the inner edges of said cover being connected to the plate, there being no straps or buckles or fastening means exposed to the baseball players.

3,572,706

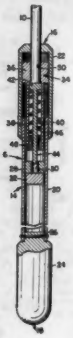
SWING FORCE INDICATOR INCLUDING AN ACTUATOR FOR DISENGAGING A MAGNETICALLY ATTRACTED MOVABLE MEMBER

Burnos L. Schroder, 2460 Park Blvd., Palo Alto, Calif.

Filed June 9, 1969, Ser. No. 831,550
Int. Cl. A63b *69/36, 49/00*
U.S. Cl. 273—26 **9 Claims**

A swing force indicator for use with sporting implements such as golf clubs, baseball bats and the like having a shaft and a closed tubular housing at an end of the shaft. A magnetic sleeve is disposed midway between ends of the housing and an axially movable member is magnetically attracted to

the sleeve. An axially movable plunger is disposed on the other side of the sleeve, is biased away from the sleeve and is



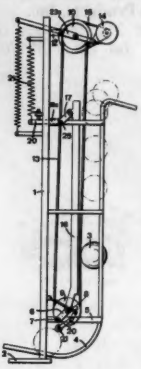
axially movable past the sleeve into engagement with the member to dislodge the member when the implement is swung with a predetermined force.

3,572,707
PRACTICE GREEN PIN HOLDER AND CUP
Thomas E. Stapleton, Jr, 6915 E. Windsor, Scottsdale, Ariz.
Filed Aug. 18, 1969, Ser. No. 850,872
Int. Cl. A63b *57/00*
U.S. Cl. 273—34 **1 Claim**

A pin holder with cooperating cup for use on golf practice greens. The upper surface of the pin holder includes a centrally located apertured boss designed to receive and hold in an upright position the staff of a practice green marker. The lower surface of the pin holder includes spikes so that it can be planted on the green in an upright position when out of the cup, thereby discouraging the throwing of the pin assembly on the green and obviating the inconvenience of stooping to pick up the pin. The cooperating cup includes a central aperture and a concentric groove to receive the spikes and hold the pin marker in a stable, upright position in the cup. The pin holder also includes an upwardly extending peripheral flange to prevent a golf ball from rolling off its upper surface.

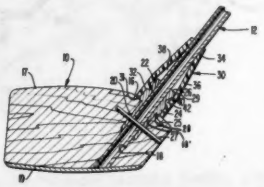
3,572,708
BOWLING BALL LIFTING DEVICE FOR BOWLING INSTALLATIONS
August Schmid, Schwerzenbach, Switzerland, assignor to Patentverwertungs-und Finanzierungsgesellschaft Serania AG, Glarus, Switzerland
Filed Apr. 30, 1968, Ser. No. 725,335
Claims priority, application Switzerland, May 2, 1967, 6264/67
Int. Cl. A63d *5/02*
U.S. Cl. 273—49 **1 Claim**

A bowling ball-lifting device for bowling installations comprising an upper and lower deflecting rollers which are pivotally mounted. An endless belt trained about the upper and lower deflecting rollers serves to raise the bowling balls. A train of rollers is disposed at the rear of the bowling ball-conveying run of the endless belt for supporting at least a



portion of the length of said conveying run of said endless belt. The lower deflecting roller is pivotally mounted so that it is raised when a ball is being elevated. A ball-blocking mechanism cooperates with the lower roller to prevent the infeed of further balls while a ball is being elevated.

3,572,709
GOLF CLUB CONSTRUCTION
John D. Risher, 127 Bonnett St, SW, North Canton, Ohio
Filed Oct. 14, 1968, Ser. No. 767,220
Int. Cl. A63b *53/02*
U.S. Cl. 273—80.2 **11 Claims**

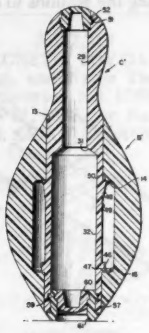


The inner sleeve joining the shaft of the golf club to the head projects but a small distance beyond the head and an outer sleeve of relatively stiff flexible materials forms in effect an extension of the inner sleeve and snugly embraces the shaft well beyond the inner sleeve. In this way, the shaft is allowed to flex along a greater extent of its length then would otherwise be possible.

3,572,710
PLASTIC BOWLING PIN
Maurice Anthony Negrini, 25 Quimby Ave, Woburn, Mass.
Original application June 25, 1969, Ser. No. 836,518. Divided and this application Dec. 4, 1969, Ser. No. 882,036
Int. Cl. A63d *9/00*
U.S. Cl. 273—82 **11 Claims**

This specification discloses a bowling pin of plastic that has the appearance of a wooden pin, sounds like a wooden pin, and scores like a wooden pin. These properties are imparted by the structure comprising a hollow main body, a hollow core with a space between the core and the body, a remova-

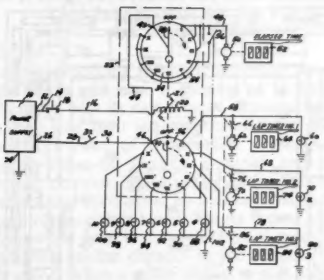
ble and replaceable cap plug for the upper end of the core, and a removable and replaceable base plug for the lower end



of the core; and method of manufacturing the pin of this construction.

The present invention relates to bowling pins, and is concurred primarily with a bowling pin of plastic that has all the properties that are of vital interest to a bowler, of a wooden pin and which properties are imparted to the pin by the structural characteristics thereof.

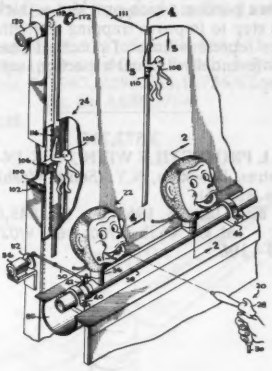
3,572,711
TIMER AND LAP COUNTER FOR SLOT CARS
Thomas H. Conklin, 2118 Windy Hill, Pontiac, Mich.; Donald D. Rice, Southfield (1015 Arbor Lane, Glenview, Ill. 60025), and Dimitri G. Theodorou, Oak Park, Mich. (1515 Industrial Way, Belmont, Calif. 94002)
Filed Mar. 21, 1966, Ser. No. 535,750
Int. Cl. A63f 9/14
U.S. Cl. 273—86 **12 Claims**



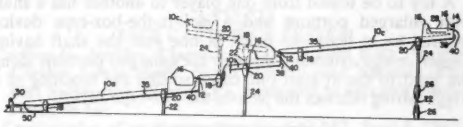
A timer and lap counter for slot cars and the like consisting of a switch disposed on the raceway on which the slot cars travel for producing an electrical impulse on passage of a slot car. The electrical impulses operate an electrical stepping switch which starts an elapsed time timer and one or a plurality of lap timers associated with each slot car. The stepping switch is also arranged to turn on or off one of a plurality of visual indicators such as lightbulbs for providing a visual display of the lap number travelled by every individual slot car.

3,572,712
MOVING TARGET AND WATER GUN WITH INDICATING MECHANISM
Ance M. Vick, 1715 Busch Blvd., Tampa, Fla.
Filed July 23, 1968, Ser. No. 746,927
Int. Cl. F41j 9/00
U.S. Cl. 273—86 **9 Claims**

An oscillating water-gun target enclosing a mercury switch which, when struck by a stream of water from a water gun, completes a circuit to a drive motor for moving an animated indicator along a vertical track with the circuit being interrupted upon failure of the water stream to strike the switch means and including a cutoff switch actuated by the indicator when it reaches the top of the track.



3,572,713
TOY RACE TRACK CONSTRUCTION SET
Daniel F. Krause, and Arnold E. Brown, Nashville, Tenn., assignors to Kusan, Inc., Nashville, Tenn.
Filed Apr. 4, 1969, Ser. No. 813,600
Int. Cl. A63f 9/14
U.S. Cl. 273—86 **13 Claims**



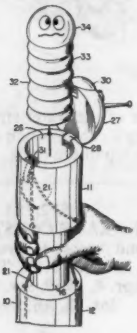
A toy race track construction set comprising a plurality of interconnectable track sections each having mutually cooperating supporting elements for itself and for adjacent sections so arranged and arrangeable as to enable the assembly of a plurality of the sections in an inclined end-to-end, superposed or angular relationship, or in any desired combination thereof, each section having a separate chute for each of a plurality of racing elements which are movable down said cooperating sections by gravity.

3,572,714
FLYING TARGET FOR TRAP SHOOTING
Erwin M. Lau, Dolton, Ill., assignor to Black Products Co., Chicago, Ill.
Filed Dec. 30, 1968, Ser. No. 787,671
Int. Cl. F41j 9/16
U.S. Cl. 273—105.4 **11 Claims**

A flying target or clay pigeon molded from a frangible pitch and clay mixture having an internal surface with sharp

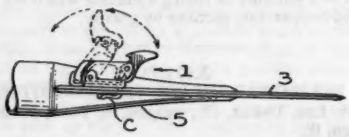
interior angles of substantially 125° and 140° formed by intersecting conical surfaces. The 125° angle is located inwardly of the rim, and 140° angle is located beneath the dome. Between the two angles, there is an inwardly protuberant surface portion which provides a thickened wall section for the step to improve trapping strength. The sharp interior angles represent lines of potential fracture which extend circumferentially. A neck portion separates the rim from the step.

3,572,715
AERIAL PROJECTILE WITH JACK-IN-THE-BOX
Carlos Ramirez, Brooklyn, N.Y. (South Washington St., Hermann, Mo. 65041)
Filed July 25, 1969, Ser. No. 845,008
Int. Cl. A63h *11/06;* **A63f** *9/02*
U.S. Cl. 273—106 **10 Claims**



A toy to be tossed from one player to another has a shaft with enlarged portions and a jack-in-the-box-type device secured by at least one catch at one end, the shaft having trigger strings extending through the enlarged portions along the shaft to the at least one catch so that the touching of a trigger string releases the jack-in-the-box-type device.

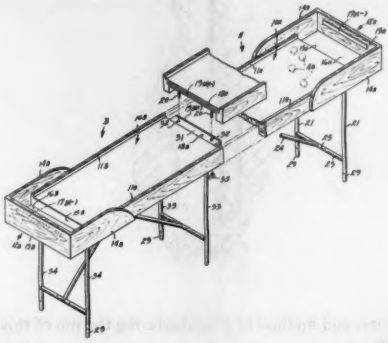
3,572,716
HUNTING ARROW WITH DRUG DISPENSING POD
Fred B. Bear, Grayling, Mich., assignor to Victor Comptometer Corporation, Chicago, Ill.
Filed Nov. 25, 1968, Ser. No. 778,548
Int. Cl. F41b *5/04*
U.S. Cl. 273—106.5 **10 Claims**



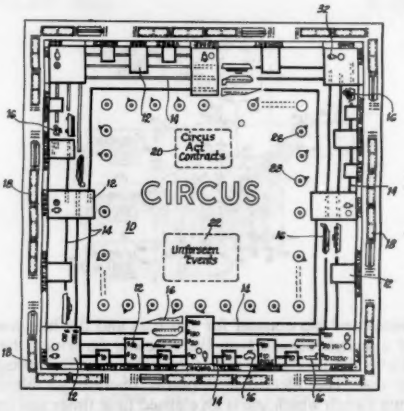
A hunting arrow including a pod readily attached to the broadhead for the automatic dispensing of a tranquilizing composition upon entry of the head into the flesh of game. Cover means normally encapsulates the composition but is displaced rearwardly by the animal flesh to expose the composition to the animal tissue to insure a quick, humane kill.

3,572,717
PORTABLE SHUFFLEBOARD
Frank Anguella, 1075 Applegate Ave., Elizabeth, N.J.
Filed Aug. 5, 1968, Ser. No. 750,252
Int. Cl. A63f *3/00*
U.S. Cl. 273—126 **1 Claim**

A miniature shuffleboard which comprises two sections capable of being quickly assembled to form a table shuffleboard for recreational play and quickly assembled into a neat package which may be easily transported by an individual from place to place. The shuffleboard features corresponding attachment means on each of the sections for aligning and connecting the sections to each other in the assembled position, pivotal legs on each of the sections for supporting the sections in the assembled position, said legs having a latch cooperative therewith for holding the legs in the disassembled position, and magnetic means for facilitating a holding of the sections in the disassembled position.



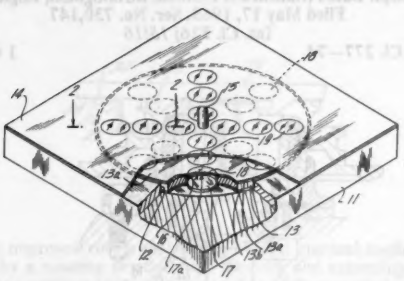
3,572,718
BOARD GAME APPARATUS
Robert L. Moore, 919 Coronet Lane, La Grange, Ill.
Filed Dec. 4, 1967, Ser. No. 687,879
Int. Cl. A63f *3/02*
U.S. Cl. 273—134 **8 Claims**



A game construction comprising a playing board having indicia thereon defining a path of travel on the board. Playing positions are included in the path of travel to be occupied by playing pieces with some of the playing piece positions being interconnected by a plurality of lines of travel whereby alternatives are available to the players. Vehicles are provided for playing pieces, and the distance of travel available is determined by the vehicle selected by the player. Pictorial representations are displayed on the board at playing piece positions with a plurality of such representations being displayed adjacent those playing piece positions having a plurality of lines of travel extending therefrom. The representations provide locating positions for vehicles as well as means for determining which vehicles can be used for travel from a particular playing piece position. The appearance of each of

said representations is sufficiently similar to that of the corresponding simulated vehicle to enable identification of the vehicle by comparing its appearance with that of the representation.

3,572,719
MAGNETIC TOY GAME
Samuel Span, Teaneck, and Walter Thum, Fair Lawn, N.J. (93 Bellmont Ave., Paterson, N.J. 07509)
Filed Apr. 11, 1968, Ser. No. 720,505
Int. Cl. A63b 71/06; A63f 9/00
U.S. Cl. 273—139 4 Claims



A toy game using the force of a permanent magnet to make indicia on magnetically attractive disks, which are normally invisible below a translucent closure plate, visible through the closure plate by attracting them against the underface of the closure plate; a circular plate which can be rotated by hand, and radially arranged small transparent windows under which portions of the translucent closure plate over the disks may appear.

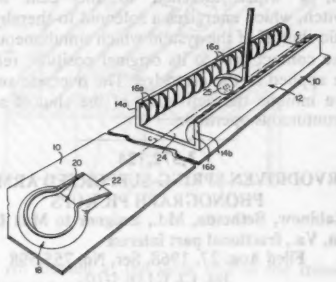
3,572,720
A GOLF PUTTING PRACTICE DEVICE
Edward T. Berg, 187 Fremont St., San Francisco, Calif.
Filed June 2, 1969, Ser. No. 829,353
Int. Cl. A63b 69/36
U.S. Cl. 273—176 7 Claims

An aid in practicing putting comprising an elongated flat base and upon said base a channel of U-shaped cross-sectional contour with its side flanges disposed longitudinally of said base. Along their inner surfaces these side flanges are provided with rows of transversely aligned, longitudinally equispaced flaps of flexible material and of preferably semicircular contour. Transversely of the channel, these flaps are spaced from each other by a distance slightly larger than the length of the putter blade. Target means for a golf ball is arranged on the base in an area thereof spaced from one of the open ends of the channel in the vertical plane of symmetry thereof. When a golfer wishes to putt a golf ball from a point on the floor of the channel onto the target means, the blade of his putter must stay free of the opposed flaps on the side flanges of the channel for the stroke to be perfect. If his putter blade touches any one of these flaps, the golfer senses this immediately and knows that his putting stroke is faulty.

3,572,721
PLAY BALLS
Stanley R. Harrison, Castle Bromwich, near Birmingham, and Robert M. Broughton, Boldmere, Sutton Coldfield, England, assignors to The Dunlop Company Limited, London County, England
Filed June 29, 1967, Ser. No. 649,869
Claims priority, application Great Britain, July 22, 1966, Mar. 7, 1967, 32,952/66;10734/67
Int. Cl. A63b 37/00
U.S. Cl. 372—218 16 Claims

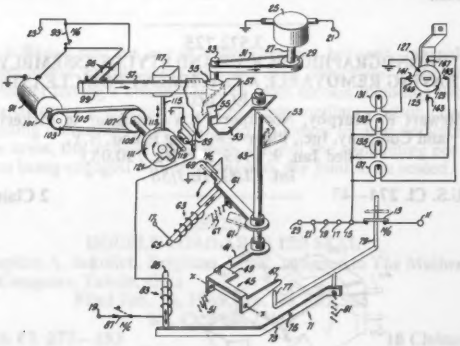
Playballs, particularly golf balls, which are moulded from a composition which includes a blend of rubber with a thermoplastic homopolymer or copolymer of an alpha-olefine. The balls may be single-piece mouldings or mouldings of a one, two or more piece core encased in a cover.

3,572,722
PLAY BALLS
Stanley R. Harrison, Castle Bromwich, near Birmingham; and Robert M. Broughton, Boldmere, Sutton Coldfield, England, assignors to The Dunlop Company Limited, London County, England
Filed July 5, 1967, Ser. No. 651,122
Claims priority, application Great Britain, July 22, 1966, Mar. 7, 1967, 32984/66;10736/67
Int. Cl. A63b 37/00
U.S. Cl. 273—218 13 Claims



A playball comprising a blend of rubber and a thermoplastic homopolymer of a styrene or substituted styrene, or a thermoplastic copolymer, terpolymer or interpolymer of a styrene or substituted styrene with (i) acrylonitrile or substituted acrylonitrile and/or (ii) an alkyl ester of acrylic or methacrylic acid and/or (iii) a diene, the rubber being present in the blend in an amount of from 10 percent to 90 percent by weight of the blend. The diene is preferably butadiene or isoprene.

3,572,723
TAPE CARTRIDGE SYSTEM
Carlton G. Jenkins, Clarendon; John Robert Peltz, Warren; Clayton Lewis Stoldt, North Warren, and Nikolaus Adalbert Szeverenyi, Warren, Pa., assignors to Sylvania Electric Products Inc.
Continuation of application Ser. No. 643,681, June 5, 1967, now abandoned. This application Oct. 31, 1969, Ser. No. 871,787
Int. Cl. G11b 5/00
U.S. Cl. 274—4 2 Claims



A tape cartridge player for multichannel endless loop tape cartridges having an automatic tape cartridge lock-in mechanism including a contact arm with a detent pawl at one end thereof, a straight angle magnetic head positioning and channel changing mechanism including a cam and follower operable both manually and automatically, and an automatic shutoff switch mechanism, but with an override which permits

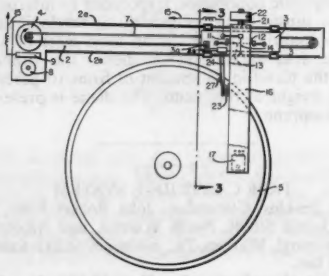
continuous play. When the cartridge is inserted in the player and the power is turned on, contact arm is moved by solenoid action so that the detent pawl contacts a detent in the cartridge and applies a fixed positive pressure thereto. Upon the completion of one channel of play, the cam is moved to the next channel position and the follower simultaneously moves the magnetic head to the next channel position. As an alternative, the channel changing mechanism may be manually actuated to switch from one channel to the next adjacent channel. After the last channel of recorded information has been played, as the channel changing mechanism is actuated, a wiper attached to the cam actuates a microswitch, which energizes a solenoid to thereby effect an automatic shutoff of the system which simultaneously acts to move the contact arm to its original position, releasing the pressure applied to the cartridge. The override switch when operative inhibits the activation of the shutoff solenoid to permit continuous operation.

3,572,724

SERVODRIVEN SPRING-SUPPORTED ARM FOR PHONOGRAPH PICKUPS

Jacob Rabinow, Bethesda, Md., assignor to Max L. Libman, Reston, Va., fractional part interest

Filed Aug. 27, 1968, Ser. No. 755,598
Int. Cl. G11b *3/10*
U.S. Cl. 274—13 **11 Claims**



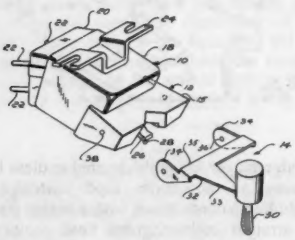
Instead of the delicate pivoted bearing ordinarily used to support a phonograph arm, a crossed spring suspension is used which permits limited motion of the phonograph pickup in the horizontal and vertical planes, but restrains the arm and pickup against motion in the direction of the longitudinal axis of the arm or rotary (torque wise) motion about this axis.

3,572,725

PHONOGRAPHIC PICK-UP AND STYLUS ASSEMBLY HAVING REMOVABLE ATTACHMENT FOR CLEANING RECORD

Stewart F. Murphy, Northport, N.Y., assignor to Pickering and Company, Inc., Plainview, Long Island, N.Y.

Filed Jan. 9, 1969, Ser. No. 790,053
Int. Cl. G11b *3/58*
U.S. Cl. 274—47 **2 Claims**



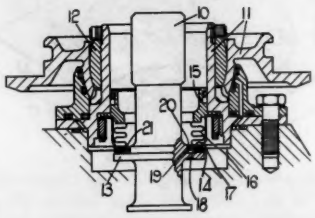
A replaceable stylus assembly for a phonographic pickup cartridge is provided with a removable brush for sweeping dust from the record grooves in advance of the path of the stylus. The brush, when mounted on the stylus assembly and when in an operative position is spaced radially inwardly of the stylus toward the center of the record disc and also projecting outwardly at a lateral or transverse angle extending toward the plane of the stylus whereby the brush serves to direct any dust inwardly toward the center of the record disc and away from the stylus.

3,572,726

SHAFT SEALS

Harry Simister Bottoms, Olton, Solihull, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed May 17, 1968, Ser. No. 730,147
Int. Cl. F16j *15/16*
U.S. Cl. 277—74 **1 Claim**



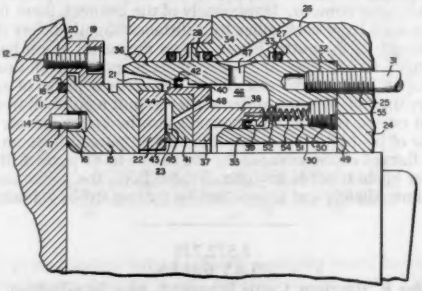
A shaft seal between a shaft and a structure comprising a sealing member with an axially presented surface carried on a bellows on the shaft or structure and an axially presented surface on the structure or shaft against which the sealing member engages, and the sealing member having a radially presented annular surface engaging with a complementary surface on the part having the other axially presented surface.

3,572,727

UNLOADING GAS BARRIER FACE SEAL

Harold Fredric Greiner, Warwick, R.I., assignor to Sealol Inc., Warwick, R.I.

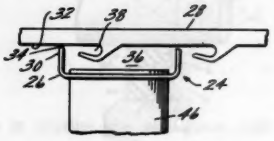
Filed July 16, 1969, Ser. No. 842,203
Int. Cl. F16j *15/40, 15/54*
U.S. Cl. 277—74 **3 Claims**



This specification discloses a dry running gas seal for gas processing systems in which a rotating shaft enters a high pressure area. The seal comprises a mating ring presenting a seal face and a seal ring providing two concentric seal faces engaging the seal face on the mating ring and cooperating therewith to define a pressure cavity. A chamber for an inert barrier gas is provided in a fixed housing and communicates with a supply of inert gas under pressure. The seal ring has throttling passage between the barrier gas chamber and the pressure cavity. The seal ring is biased towards the mating ring by springs mounted in the housing. These springs provide the loading force under which the seal faces are urged

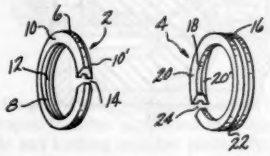
together. Increase in the pressure of the barrier gas is transmitted through the passages to increase the pressure of the gas in the pressure cavity. This increase results in a decrease of the loading forces.

3,572,728
ROTARY SEAL
Robert J. Smuland, Cincinnati, Ohio, assignor to General Eelctric Company
Filed June 17, 1968, Ser. No. 737,720
Int. Cl. F16j *15/48;* **F02f** *11/00;* **F01d** *1/04*
U.S. Cl. 277—57 **1 Claim**



An improved rotary seal having at least one seal tooth carried by a rotating or stationary member and extending into close or rubbing contact with a sealing surface carried by the other member and means downstream of the seal tooth to receive and direct leakage fluid toward the leakage passage to thereby increase the apparent downstream pressure, decrease the apparent pressure drop across the seal tooth and, hence, decrease the amount of fluid leakage across the seal tooth.

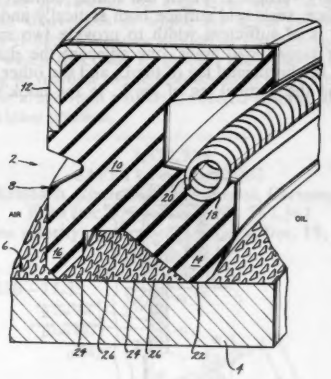
3,572,729
EXPANDING RING SEAL
Elmer Raleigh Hodil, Jr., New Haven, Conn., assignor to Olin Corporation
Filed May 23, 1968, Ser. No. 731,512
Int. Cl. B65d *53/00;* **F16j** *15/46*
U.S. Cl. 277—71 **2 Claims**



A fluid obturating device comprising at least two expandable rings which flex outwardly and inwardly respectively when subjected to fluid pressure.

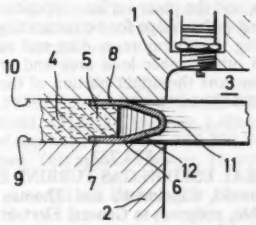
3,572,730
WEAR SURFACE FOR FACILITATING LUBRICATION OF ELEMENTS IN ENGAGEMENT THEREWITH
Dennis L. Otto, and Peter C. Paterson, Canton, Ohio, assignors to The Timken Company
Filed June 13, 1969, Ser. No. 833,022
Int. Cl. F16j *15/32*
U.S. Cl. 277—96 **19 Claims**

A wear surface composed of a multiplicity of closely spaced triangular asperities is engaged by an element which moves relative thereto. The triangular shape of the asperities enables them to pump a lubricant contained in the depressions between the asperities in a direction transverse to the direction of relative movement. The asperities may be provided with curved leading corners to force a portion of the lubricant across the lands of the asperities and thereby furnish additional lubrication to the element as it passes over those lands. The asperities may be arranged in overlapping rows so as to insure adequate support of the element. The wear surface may be utilized in thrust applications such as on



the thrust rib located at the large end of the frustoconical race on a tapered roller bearing.

3,572,731
FLANGE SEAL
Friedhelm Stecher, Burscheid, Germany, assignor to Goetzewerke, Burscheid, Germany
Filed Nov. 19, 1968, Ser. No. 777,068
Claims priority, application Germany, Nov. 21, 1967, P 16 50 026.8
Int. Cl. F02f *5/00, 11/00*
U.S. Cl. 277—153 **11 Claims**

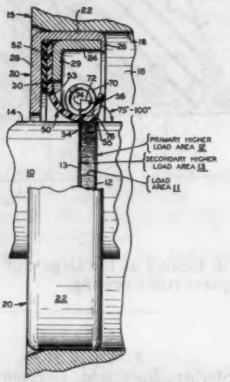


A flange seal for use in sealing flanges between internal-combustion engine parts and the like comprises a sheath member having a channel shaped cross section including two planar arms, a generally U-shaped intermediate portion connecting the arms, resilient supporting means located between the arms, the arms of the sheath, but not the connecting portion being engaged with the flanges of the joint to be sealed.

3,572,732
DOUBLE LOAD AREA LIP SEAL
Stephen A. Sekulich, Brighton, Mich., assignor to The Mather Company, Toledo, Ohio
Filed Feb. 26, 1969, Ser. No. 802,586
Int. Cl. F16j *15/32*
U.S. Cl. 277—153 **18 Claims**

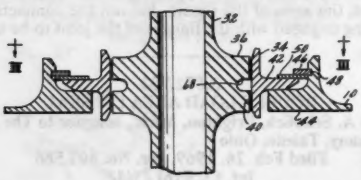
A polytetrafluoroethylene elastomeric seal between two relatively movable parallel surfaces, such as for a shaft through a housing, which seal has a substantially uniform bent L-shaped transverse or radial cross section in which the top portion of the vertical leg of the L is fixed substantially perpendicularly to one of the parallel surfaces, such as by a press fit ring in the housing around the shaft, and the lower portion of the vertical leg of the L is bent so as to rest in parallel sliding contact with the other surface and the nor-

mally horizontal leg of the L extends substantially perpendicular to this other surface. The thus positioned seal forms a reverse J-shaped cross section bridging the space between the two parallel surfaces. That portion of the lower part of the normally vertical L which has sliding contact with the other surface, seals said surface both statically and dynamically, and is of sufficient width to provide two spaced increased or higher load areas, one adjacent the sharp angle portion of the horizontal leg of the L, and the other adjacent the bend in the vertical leg of the L. In the hook of this J-



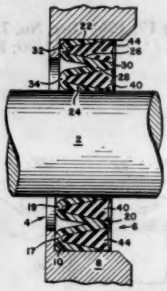
shaped cross section there may be located a garter spring to insure these two separate higher load areas at the two side edges of the wide contact area of this lip seal. Said other higher load area may also comprise a sharp ridge formed in the outer surface of the L-shaped leg, and/or have adjacent pumping vanes; and the inner surface opposite this ridge may also be provided with a ridge for better seating or pocketing the garter spring. Furthermore, a dust seal may be spaced outside of said other higher load area and attached to the means which anchors the upper portion of the L-shaped leg of the seal or to its housing.

3,572,733
SHAFT SEAL USED IN GAS TURBINE ENGINES
Werner E. Howald, Cincinnati, and Thomas L. Hampton, Loveland, Ohio, assignors to General Electric Company
Filed Jan. 2, 1969, Ser. No. 788,406
Int. Cl. F16j *9/00;* **F16r** *41/00*
U.S. Cl. 277—173 **5 Claims**



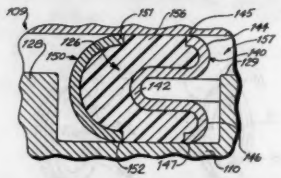
In a gas turbine engine an improved seal is provided for a shaft or the like projecting through a duct wall which defines a gas stream flow path. Two forms of seal are shown. Each provides, through the use of a sleeve, sealed axial movement and sealed lateral movement (in a normal plane) between the shaft and the duct wall. An effective seal is provided which accommodates differential thermal growth without stressing the components.

3,572,734
SHAFT SEAL
John E. Holt, Hampton, Conn.
Filed Sept. 27, 1968, Ser. No. 763,176
Int. Cl. F16j *9/08, 15/32*
U.S. Cl. 277—205 **8 Claims**



A shaft seal formed of nylon and having a W-shape in radial cross section with a central hinge portion interconnecting two oppositely disposed V-portions and elastomer bodies filling the cavities formed by the walls of said V-portions.

3,572,735
CAPTIVE PLASTIC SEAL
Eldon O. Dryer, Malibu, Calif., assignor to North American Rockwell Corporation
Continuation of application Ser. No. 571,886, Aug. 11, 1966, now abandoned. This application Nov. 17, 1969, Ser. No. 871,719
Int. Cl. F16j *15/06*
U.S. Cl. 277—235 **12 Claims**

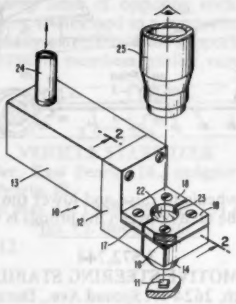


A seal in which a viscoelastic mass is contained by a means in a confined volume so that a peripheral surface of the mass is exposed for sealing and wherein, in operation, a means exerts a deforming pressure on the mass to provide intimate sealing with a surface to be sealed.

3,572,736
VACUUM CHUCK
John R. Lynch, Fishkill; Leonard E. Otten, Poughkeepsie, and Herbert Wenskus, Hopewell Junction, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed June 19, 1969, Ser. No. 834,783
Int. Cl. B23b *31/30*
U.S. Cl. 279—3 **10 Claims**

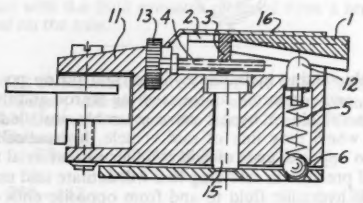
This patent discloses a vacuum operated chuck for clamping small workpieces such as integrated circuit chips. The chuck includes a housing having hingeably connected jaws, the jaws being biased apart or in the open position as by a biasing hinge. A chamber is located in the jaws and at the lower portion thereof is a workpiece receiver dimensioned for registration with a workpiece. At the upper portion of the housing is window means which is positioned to permit viewing of the receiver and thus the inwardly facing portion of any workpiece held thereby. The chamber is connected

through a conduit to a vacuum supply which causes pivotal action of the jaws permitting the receiver to grasp the work-



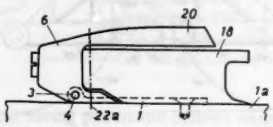
piece when it overlies the workpiece and is in registry therewith.

3,572,737
SPRING LOCK DEVICE
Thomas G. Smolka, Vienna-Mauer, and Walter Schwarz, Strasshof, Austria, assignors to Wiener Metallwarenfabrik Smolka & Company, Vienna-Schwechat, Austria
Filed Nov. 14, 1968, Ser. No. 775,693
Claims priority, application Austria, Nov. 21, 1967, A10514/67
Int. Cl. A63c *9/08*
U.S. Cl. 280—11.35 **9 Claims**



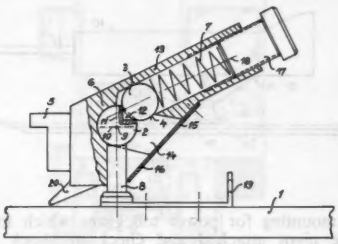
A spring-locking device for safety release ski bindings having a wedge-shaped member supported for adjustable movement in a guide and locking member resiliently engaging the wedge-shaped member to releasably lock the safety release ski binding so that an adjustment of the wedge-shaped member will vary the amount of force required to release the ski binding.

3,572,738
SECURING HEAD FOR SAFETY SKI BINDINGS
Hans Martin, 6 Volkmarstrasse, Zurich, Switzerland
Filed Sept. 24, 1969, Ser. No. 860,614
Claims priority, application Switzerland, Oct. 4, 1968, 14,825
Int. Cl. A63c *9/00*
U.S. Cl. 280—11.35 **10 Claims**



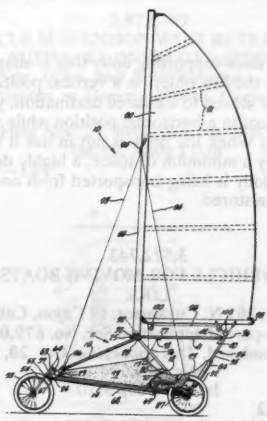
There is disclosed a securing head for a safety ski binding that is capable for use as either a toe binding member or a heel binding member which includes two lever shaped jaws engageable with a ski boot and each turnable about an axis that is approximately vertical in relation to the ski and said jaws being urged to boot engaging position by at least one spring. Both jaws being the long lever arms of double arm levers, the short arms of which are acted on by a spring through a stroke reducer or motion or displacement limiting member which functions to shorten the axial movement of the spring in relation to the displacement of or stroke of the short lever arms when a force is exerted tending to move the jaws to release position.

3,572,739
SAFETY SKI BINDING
Richard Erlebach, Riezlern-Kleinwalsertal, Germany
Filed Dec. 9, 1968, Ser. No. 782,361
Claims priority, application Germany, Dec. 19, 1967, P 15 78 761.8
Int. Cl. A63c *9/084*
U.S. Cl. 280—11.35 **6 Claims**



A safety ski binding in which a ball is mounted on the ski and engages the socket of ski boot engaging means. A detent recess is provided in the ball and receives a spring-backed holding device mounted in the ski boot engaging means. The ski boot engaging means is thereby normally held in a selected position as determined by said detent recess but same can move out of such normal position in any direction permitted by the ball-and-socket relationship upon application of sufficient force thereto.

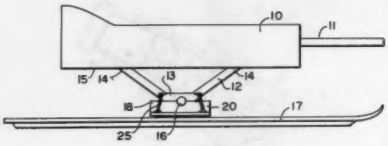
3,572,740
COLLAPSIBLE SAIL-PROPELLED VEHICLE
Donald F. Rypinski, 23151/2 Glenneyre, Laguna Beach, Calif.
Continuation of application Ser. No. 717,254, Mar. 29, 1968, now abandoned. This application Apr. 10, 1970, Ser. No. 28,165
Int. Cl. B62b *13/04*
U.S. Cl. 280—16 **12 Claims**



An iceboat or a wheeled land yacht for use on a hard surface and propelled by a sail. A metal-tube frame of the vehi-

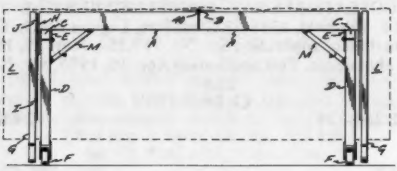
cle is assembled using pivoted connections and easily releasable fasteners, permitting the frame to be quickly collapsed for compact shipment or storage. A cockpit is formed from a flexible and foldable material such as canvas which is suspended in hammock fashion within the frame. The frame includes a roll bar to provide protection for an occupant if the vehicle capsizes. The frame carries two aft-mounted wheels or runners, and a single wheel or runner is centrally and steerably mounted at a forward end of the frame. A mast and sail are secured to and extend above the frame.

3,572,741
SKI MOUNTINGS FOR POWER TOBOGGANS AND THE LIKE
Nelson E. Shorrick, R.R. #1 S3 B-7, Dryden, Ontario, Canada
Filed Mar. 17, 1969, Ser. No. 807,833
Int. Cl. B62b *17/04*
U.S. Cl. 280—26 **1 Claim**



A ski mounting for power toboggans which includes a transverse pivot attached and check or shock absorber springs fore and aft of the pivot between the ski of the body frame.

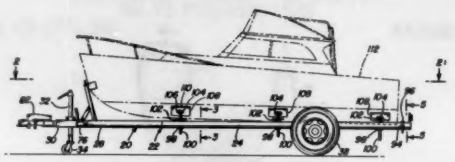
3,572,742
COLLAPSIBLE DOOR-SUPPORTING DOLLY
Theodore L. Marker, 5713 Oliva Ave., Lakewood, Calif.
Filed June 16, 1969, Ser. No. 833,251
Int. Cl. B62b *5/00*
U.S. Cl. 280—42 **7 Claims**



A collapsible door-supporting dolly that is adapted to hold a heavy door or the like object in a vertical position whereby the door may be moved to a desired destination, yet the dolly maintains the door in a horizontal position while work is performed thereon. When the dolly is not in use it may be collapsed to occupy a minimum of space, a highly desirable feature when the dolly is being transported from one job site to another, or when stored.

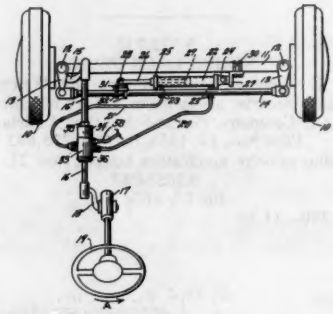
3,572,743
WHEELED VEHICLE FOR MOVING BOATS OR THE LIKE
Edward L. Parr, 301 N. Cuyamaca, El Cajon, Calif.
Continuation-in-part of application Ser. No. 679,032, Oct. 30, 1967, now abandoned. This application Oct. 20, 1969, Ser. No. 870,004
Int. Cl. B60p *3/10*
U.S. Cl. 280—42 **12 Claims**

A wheeled vehicle for moving boats or the like, which vehicle includes a forklike frame, i.e. it includes two rearwardly extending and laterally disposed prongs. Each prong carries a bearing for a lever which is supported by a ground wheel. The bearings for the levers can be raised and lowered



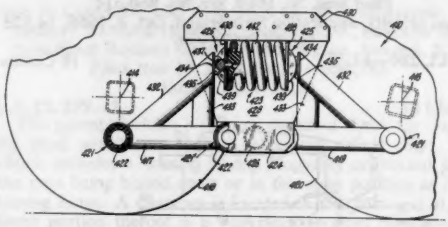
relative to the wheels to raise and lower the prongs with the boat thereon. The area between the prongs is unobstructed.

3,572,744
AUTOMOTIVE STEERING STABILIZERS
Richard L. Smith, 2624 W. Second Ave., Durango, Colo.
Filed May 16, 1969, Ser. No. 825,301
Int. Cl. B62d *9/00*
U.S. Cl. 280—90 **8 Claims**



A double-acting hydraulic cylinder and piston positioned between, and connected to, the steering tie rod and the front axle of a vehicle. A bypass valve assembly, installed in the steering wheel drag link of said vehicle, hydraulically connected to opposite ends of said cylinder so that axial tension and axial pressure in said drag link will actuate said assembly to bypass hydraulic fluid to and from opposite ends of said cylinder.

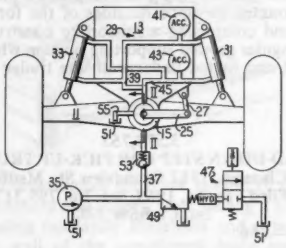
3,572,745
MULTIPLE AXLE SUSPENSION
Elwood H. Willetts, 120 Penataquit Ave., Bay Shore, N.Y.
Continuation-in-part of application Ser. No. 721,558, Apr. 1, 1968, now abandoned, which is a continuation-in-part of application Ser. No. 562,344, July 1, 1966, now abandoned, and a continuation-in-part of 649,502, June 28, 1967, now abandoned. This application July 14, 1969, Ser. No. 843,288
Int. Cl. B60g *5/00*
U.S. Cl. 280—104.5 **10 Claims**



The present invention includes a multiple axle articulated suspension structure for vehicles wherein road and tire ex-

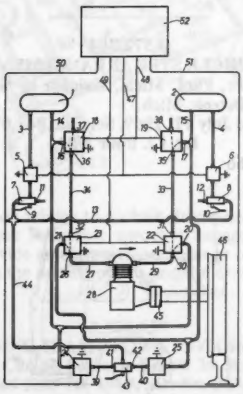
citations of each axle are isolated from its opposing axle as well as from the sprung mass, through deflections of pressure-resistant, load-equalizing supports. The load-equalizing supports include elastomeric members which interconnect vertically extending arms of opposing rocker beams, said rocker beams being trunnioned to a supporting structure and having longitudinally extending arms supported by opposing axles. The elastomeric members exhibit varying spring rate when deflected.

3,572,746
VEHICLE STABILIZER
James P. Mueller, East Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed May 23, 1968, Ser. No. 731,433
Int. Cl. B60g *21/00*
U.S. Cl. 280—112 **10 Claims**



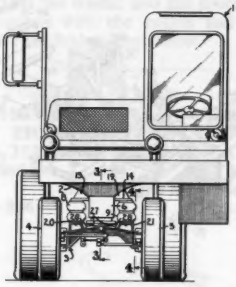
A stabilizing means for controlling the attitude of a vehicle having an oscillatable rear axle in which hydraulic jacks are mounted so as to operate between the vehicle body or frame and the oscillatable axle; the jacks are actuated in accordance with the fluid pressure received from a servovalve mounted on the axle.

3,572,747
AIR SUSPENSION SYSTEM FOR VEHICLES
Hans Pollinger; Alfred Strohmer, and Hans Kirchlechner, Munich, Germany, assignors to Knorr-Bremse, GmbH, Munich, Germany
Filed Mar. 18, 1969, Ser. No. 808,225
Int. Cl. B60g *21/06*
U.S. Cl. 280—112 **10 Claims**



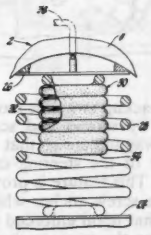
A vehicle having pneumatic bellows supporting both sides of the vehicle body is provided with a compressor which pumps air from the bellows on the inside of a curve to the bellows on the outside of a curve when the vehicle travels along a curved path. A valve system keeps the intake and discharge of the compressor open to the atmosphere when the vehicle is travelling in a straight line but is actuated in response to the angular acceleration of the vehicle about a vertical axis to connect the compressor intake and discharge to the bellows on both sides of the vehicle when the vehicle travels along a curved path. The compressor is driven from an axle of the vehicle through a speed responsive clutch so as to operate only when the vehicle travels above a predetermined speed. Level regulators are provided to regulate pressure in the bellows only when the vehicle travels in a straight line. A further level regulator is responsive to variations in the height of the longitudinal tilt axis of the vehicle.

3,572,748
SUSPENSION SYSTEM FOR VEHICLE WHEELS
Frank H. Vivian, Ottowa, Kans., assignor to Daybrook-Ottawa Corporation, Ottawa, Kans.
Filed Nov. 29, 1968, Ser. No. 779,990
Int. Cl. B60g *19/00*
U.S. Cl. 280—124 **5 Claims**



A suspension system for vehicles having a frame with a transverse frame member for carrying an elongate axle assembly below the transverse frame member, said axle having a pair of laterally spaced vehicle wheels rotatably and steerably mounted on opposite ends thereof. An elongate first housing on said frame member has a guide chamber of rectangular cross section with a bottom opening in which is slidably received an elongate second guide or slide housing with the axle assembly pivotally mounted on a lower end thereof. The structure has engageable portions for limiting vertical and rocking movement of the axle assembly with an elongate spiral spring having an upper end engaging said first housing and a lower end engaging the second slide or guide housing and a pair of elongate inflatable resilient members spaced on opposite sides of the first housing and each having a lower end mounted on the axle assembly and an upper end fixably mounted relative to the axle assembly.

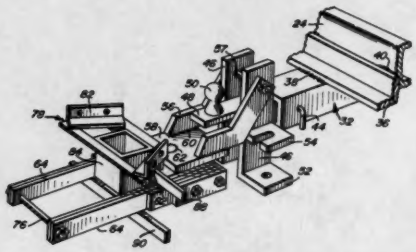
3,572,749
VEHICLE SUSPENSION WITH RETRACTABLE AUXILIARY OVERLOAD SPRING
Ming-Chih Yew, Utica, and John Robertson, Jr., Royal Oak, Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Nov. 29, 1968, Ser. No. 779,784
Int. Cl. B60g *11/56*
U.S. Cl. 280—124 **4 Claims**



A vehicle suspension system in which a flexible bladder disposed within a primary suspension coil spring is inflated

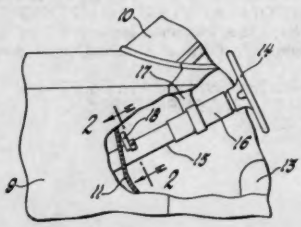
into axial abutting contact with the sprung and unsprung masses and radial contact with the inner surfaces of the spring coils to provide auxiliary leveling during greater than normal load conditions, and including control means for retracting the bladder axially and radially sufficient to withdraw it from contact with the spring coils and one of the masses when auxiliary leveling is not required.

3,572,750
ANTI-SWAY DETENT DEVICE
Millard A. Derr, Jr., 17 Richard Court, Orinda, Calif.
Continuation-in-part of application Ser. No. 785,536, Dec. 20, 1968, now abandoned. This application June 19, 1969, Ser. No. 834,622
Int. Cl. B62d *53/00*
U.S. Cl. 280—446 **7 Claims**



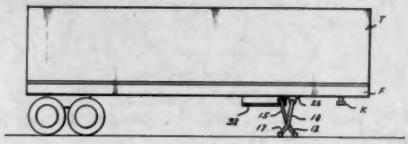
An elongated hitch member for attachment to and rearward projection from a towing vehicle and a trailer tongue with its forward end pivotally secured to the hitch member for oscillation about a first upstanding axis. An elongated connecting link is provided and supported at its forward end from the hitch member for oscillation about a second upright axis disposed rearwardly of the first axis and connected at its rear end to the tongue rearward of the second axis for angular displacement about a third upstanding axis relative to the tongue and in a manner to yieldingly resist such angular displacement from a position with the connecting link generally paralleling the longitudinal axis of the tongue.

3,572,751
DISLODGEABLE SCREW ANCHORS AND INSTALLATION
Larry W. Burr, and Harold V. Elliott, Saginaw, Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed June 16, 1969, Ser. No. 833,562
Int. Cl. B60r *21/00*
U.S. Cl. 280—150 **17 Claims**



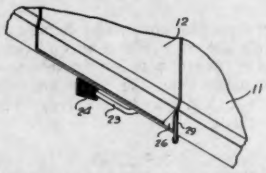
A neutral start and backup switch is mounted on a collapsible steering column by screws and screw anchors. The anchors have a breakaway feature so that the switch will not unduly hinder collapse of the steering column upon some casualty to the vehicle. This feature is provided by ramp surfaces on the legs of the screw anchor which enter a hole in steering column such that upon enforced relative movement of the switch and column the screw anchors are cammed out of the mounting holes in the column. The anchors may be metal or plastic.

3,572,752
LANDING GEAR FOR SEMI-TRAILERS AND THE LIKE
Charles E. Harp, 2110 Harper St., Pasadena, Tex.
Filed July 24, 1969, Ser. No. 844,434
Int. Cl. B60s *9/02*
U.S. Cl. 280—150.5 **3 Claims**



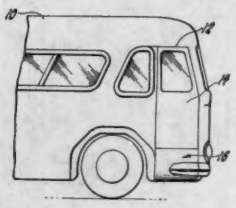
A landing gear for supporting the forward end of a semitrailer and the like after the prime mover or tractor has been removed. The landing gear comprises a pair of support members mounted on opposite sides of the forward end of the trailer and comprising a scissorlike construction which forms a triangular ground supporting portion which can then be collapsed and folded underneath the trailer when not in use.

3,572,753
FOLD-DOWN STEP FOR PICK-UP TRUCKS
Edmund H. Claassen, 1912 Grandview St., Medford, Oreg.
Filed Feb. 14, 1969, Ser. No. 799,317
Int. Cl. B60r *3/02*
U.S. Cl. 280—166 **8 Claims**



A step pivoted to the body of a pickup truck subjacent its door. The step is carried on a rod rotatably-mounted in a pivot sleeve. The rod has an arm connected by a cable to the door and by a spring to the truck body opposite the cable, to normally rotate the step to a retracted position beneath the truck body. Opening the door pulls the step to operative position.

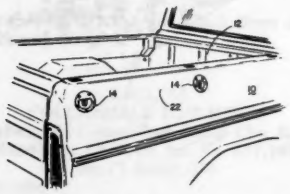
3,572,754
VEHICLE STEP ARRANGEMENT
Stanley B. Fowler, Flint, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed July 11, 1969, Ser. No. 841,079
Int. Cl. B60r *3/02*
U.S. Cl. 280—166 **5 Claims**



In a bus-type vehicle ingress and egress of passengers is carried out through a door opening the upper portion of which is closed by a swingably mounted door and the lower portion of which is closed by a step and platform arrange-

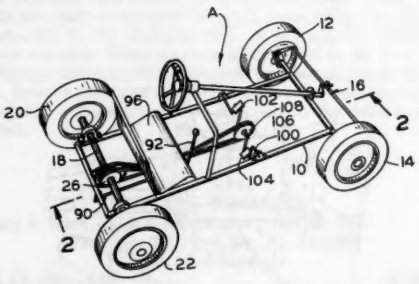
ment selectively movable between a raised position wherein a portion of the step and platform structure is movable to either close the door opening or open the opening and provide a high level platform for passenger ingress and egress at vehicle floor level, and a lowered position wherein it provides a plurality of steps between ground level and vehicle floor level.

3,572,755
RECESSED ROPE ANCHOR FOR TRUCK BODIES
Harold C. Baldwin, 5225 E. Whitton, Phoenix, Ariz.
Filed Apr. 3, 1969, Ser. No. 813,044
Int. Cl. B60p *7/08*
U.S. Cl. 280—179 **2 Claims**



A recessed rope anchor for truck bodies, or the like, said anchor of generally cup-shaped form having a bolt receiving flange extending outwardly therefrom and a peg in a normally upper wall of the cup-shaped body and extending downward from the upper wall of the cup-shaped body into an open area thereof; said upper wall being relatively thicker than the lower wall of the cup-shaped body to provide a firm cantilever support for said peg.

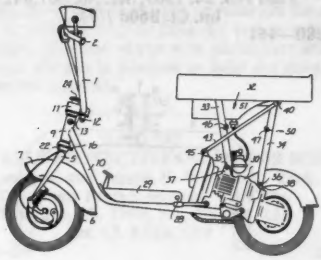
3,572,756
CHAIN-DRIVEN VEHICLES
Joseph C. Metzger, 4755a Alma, St. Louis, Mo.
Filed Apr. 28, 1969, Ser. No. 819,766
Int. Cl. B62m *25/06*
U.S. Cl. 280—238 **3 Claims**



This invention relates to a chain-driven vehicle in which a new and unique selectable sprocket engagement system is utilized to provide an extremely wide range of power transfer ratios between the driving pedals and the driven wheels.

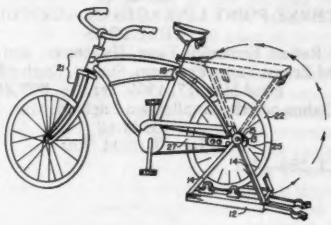
3,572,757
FOLDING FRAME FOR A MOTORCYCLE
Javier Sanglas Camps, Paseo de Gracia 29, Barcelona, Spain
Filed June 16, 1969, Ser. No. 833,468
Claims priority, application Spain, July 9, 1968, Pat. 356,171
Int. Cl. B62k *15/00*
U.S. Cl. 280—278 **5 Claims**

A folding frame for a motorcycle, providing means for folding the handlebars, the front wheel and a footrest, and a complete system for lowering the seat. The folding operations of the various elements are effected by rotation around particular axes. When in the unfolded or operative position the various elements are firm enough not to undergo any change when the motorcycle is moving. The handlebars and the front wheel are folded in directions of rotation which



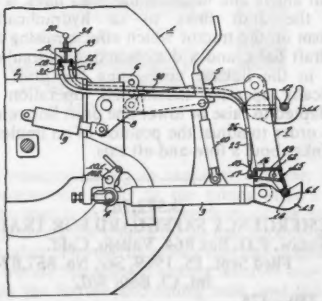
converge towards the frame, and the footrest rotates into a position contiguous with the engine and thus to provide space to receive the folded front wheel.

3,572,758
COMBINATION BICYCLE LUGGAGE CARRIER AND BICYCLE EXERCISE STAND
Robert E. Lee, 312 Eanes Road, Austin, Tex.
Filed Feb. 13, 1969, Ser. No. 799,054
Int. Cl. B62h *1/04*
U.S. Cl. 280—296 **7 Claims**



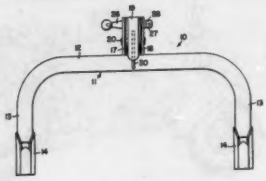
A multipurpose device for use in connection with a bicycle, said device being adapted for use in one of its positions as a bicycle luggage carrier and rotatable to a second position where it may serve as a bicycle stand to convert the bicycle into a physical-exerciser device.

3,572,759
LATCH CONTROL MEANS
Robert T. Baugh, Brookfield, and Craig W. Cannon, New Berlin, Wis., assignors to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed Dec. 23, 1968, Ser. No. 786,088
Int. Cl. B62d *53/00*
U.S. Cl. 280—461 **10 Claims**



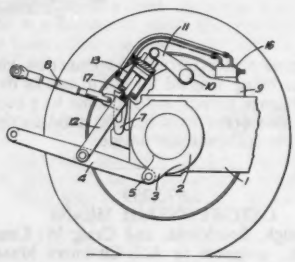
A latching means on a vehicle-hitching device having remote latching control.

3,572,760
QUICK-COUPLER
Jess Jerome Jones, Dixon, Calif., assignor to Deere & Company, Moline, Ill.
Filed Feb. 24, 1969, Ser. No. 801,642
Int. Cl. B60d 1/04
U.S. Cl. 280—461 4 Claims



A quick-coupler having a pair of spaced upwardly open lower hooks and a centered upper hook for receiving the hitch pins of an implement. The upper hook is pivotally mounted for movement between a first position in which it is rearwardly open and a second position in which it is downwardly open. A latch lever is mounted adjacent the upper hook for movement in a path perpendicular to the path of movement of the upper hook between an open position and a locking position in which it extends across the path of movement of the upper hook to lock the upper hook in the second position.

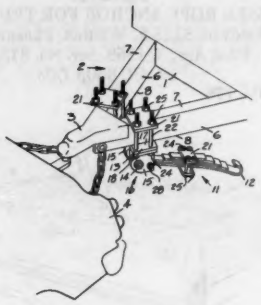
3,572,761
THREE-POINT LINKAGES OF AGRICULTURAL TRACTORS
David Robert Frederick Tapp, Haslemere, and Geoffrey Edward Ernest Tapp, Farnham, Surrey, England
Filed Mar. 17, 1969, Ser. No. 807,819
Claims priority, application England, Mar. 20, 1968, 13549/68
Int. Cl. B60d 1/00
U.S. Cl. 280—461 5 Claims



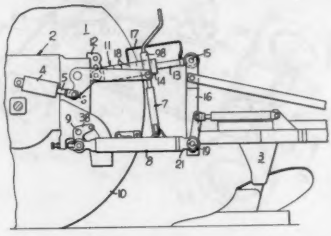
A three-point linkage for an agricultural tractor comprises two spaced draft links pivotally connected to the rear of the tractor and extending rearwardly therefrom, a rearwardly extending top link pivotally connected to the rear of the tractor at a point above and between the draft links, a linkage connecting the draft links to an hydraulically operated mechanism on the tractor which effects raising and lowering of the draft links, and a double-acting hydraulic ram incorporated in the linkage connecting the draft links to the hydraulically operated mechanism, operation of the ram being adapted to raise or lower one draft link relatively to the other in order to adjust the position of an implement carried by the links about a fore-and-aft axis.

3,572,762
EMERGENCY SAFEGUARD FOR TRAILERS
Jim T. Votaw, P.O. Box 864, Vallejo, Calif.
Filed Sept. 15, 1969, Ser. No. 857,874
Int. Cl. B60s 9/02
U.S. Cl. 280—475 7 Claims

In the event the front end of the trailer is dropped by reason of the towing vehicle breaking away from the trailer, or blow out of a rear tire of the towing vehicle, or breaking of an axle of the towing vehicle on either side, or failure of either of the overload springs of the towing vehicle, or the like, a leaf spring mounted on each of the converging sides of the V-shaped forward end of the trailer frame safeguards the trailer against damage or fatal accident. Each leaf spring extends downwardly and rearwardly and the free end of each spring is formed into an upwardly curved shoe spaced from the ground so as to normally ride over bumps, high curbs, or other obstacles, and to skid along the road surface and support the forward end of the trailer when said forward end is dropped for any reason.



3,572,763
THREE-POINT HITCH
Craig W. Cannon, New Berlin, and Larry F. Stikeleather, Greendale, Wis., assignors to Allis-chalmers Manufacturing Company, Milwaukee, Wis.
Filed Nov. 22, 1968, Ser. No. 778,046
Int. Cl. B60d 1/00
U.S. Cl. 280—479 9 Claims

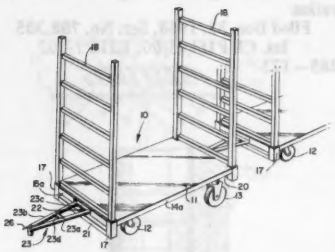


A three-point hitch having a powered upper link and draft arms to extend and contract the link and raise and lower the draft arms for easier connection of the tractor to the implement and better control of the implement during its operation.

3,572,764
RETRACTABLE HITCHING DEVICE
Richard J. Rubin, 39 Dolphin Road, Newton, Mass.
Filed Dec. 16, 1968, Ser. No. 784,131
Int. Cl. B60d 1/00
U.S. Cl. 280—491 10 Claims

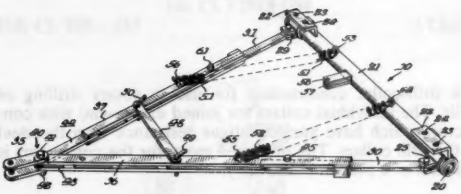
A retractable hitching device including a member having

at least two pins extending therefrom and a pair of rails over



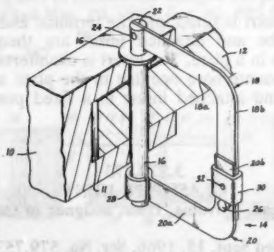
which the two pins slide and in which there are provided holes for receiving the pins.

3,572,765
COLLAPSIBLE TOW HITCH
James B. Tieben, 106 Cottonwood, Dodge City, Kans.
Filed Sept. 12, 1969, Ser. No. 857,397
Int. Cl. B60d *1/00*
U.S. Cl. 280—491 **6 Claims**



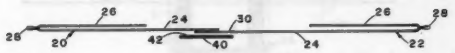
A collapsible tow hitch is provided for use in towing a vehicle, such as a truck, behind a second vehicle, such as a tractor. The tow hitch is provided with a pair of swingable branch arms pivotally connected at their forward ends to a tow bar and individually pivotally connected at their rear ends to a pair of swingable support arms which are pivotally connected to the opposite ends of a horizontal elongated frame member. When the tow hitch is not in use it is easily collapsed into a readily accessible position in which the tow bar, branch arms and support arms are horizontally stacked alongside a mounting frame attached to the vehicle to be towed.

3,572,766
LOCKPIN ASSEMBLY
Henry J. Jezek, 1204 E. Downs Ave., Temple, Tex.
Filed July 23, 1969, Ser. No. 844,099
Int. Cl. B60d *1/02*
U.S. Cl. 280—515 **5 Claims**



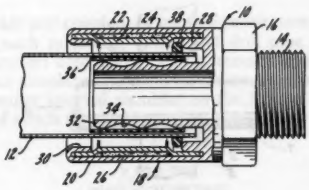
The lockpin assembly disclosed includes a pin for inserting through the aligned holes of a tongue and drawbar to connect them together. To hold the pin in place two generally L-shaped members are used. They are pivotally connected together. One of them is pivotally connected to the top of the pin, while the free end of the other member has a sleeve that slides over the lower end of the pin underneath the drawbar and tongue. A collar is used to hold the two members from relative rotation, after the sleeve is in place over the end of the pin, to lock the pin in position to hold the drawbar and tongue connected together.

3,572,767
ADJUSTABLE PROTECTIVE COVER FOR BOOKS
Samuel M. Learned, and Joseph E. Wisotzkey, York, Pa., assignors to The Maple Press Company, York, Pa.
Filed Mar. 18, 1969, Ser. No. 808,126
Int. Cl. B42d *3/04*
U.S. Cl. 281—34 **2 Claims**



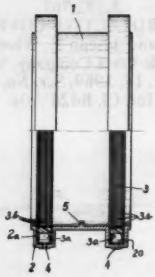
An adjustable protective cover attachable to the exterior of either a casebound or a paperback book formed from flexible synthetic resin sheet material comprising two sections each having two overlying plies of said material connected permanently along three edges by heat-sealing to form pockets respectively positioned to receive the covers of a casebound or paperback book, one of said sections having one free edge extending laterally beyond the open edge of the pocket to provide a connecting panel adapted to extend around the spine of a casebound or paperback book, and adhesive means to connect the outer edge portion of said connecting panel to the other section of said cover to secure the sections together to provide a unitary cover. When used with paperback books, each of said pockets also is arranged to contain a thin stiffening board of substantially the same size as the covers of a paperback book which is to be received in the pockets, said boards being positioned adjacent the inner surfaces of said book covers when received within said pockets, whereby the entire exterior of a paperback book may be viewed through the transparent cover which overlies said outer surfaces thereof.

3,572,768
TUBING CONNECTOR
David T. James, De Kalb, Ill., assignor to Ideal Industries, Inc., Sycamore, Ill.
Filed Dec. 24, 1968, Ser. No. 786,644
Int. Cl. F16l *13/14*
U.S. Cl. 285—3 **10 Claims**



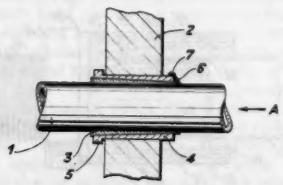
A tubing connector having an explosion chamber adapted to grip the connector firmly to the tubing after a charge within the chamber is exploded. One form of the invention provides a ferrule on the connector so that expansion of the explosion chamber deforms the tubing wall into gripping contact with the ferrule. An annular sealing member may be provided between the ferrule and tubing wall, and the ferrule surface may be rippled. An O-ring seal may also be provided whereby the expanded chamber forces the seal into sealing engagement with the connector and tubing wall.

3,572,769
PIPE COUPLING
Johann Lingl, 70 Finninger St, Neu-Ulm, Donau, Germany
Filed Nov. 20, 1968, Ser. No. 777,255
Claims priority, application Germany, Nov. 29, 1967, L57978
Int. Cl. F16l 17/02
U.S. Cl. 285—96 4 Claims



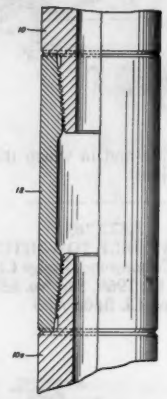
A pipe coupling for joining the free ends of pipe, including a coupling sleeve and a pair of annular sealing rings that fit within channels on the inner surface of the sleeve, each channel being disposed so that it surrounds one of the pipes near its end and positions one of the sealing rings for engagement with the outer surface of the pipe. Each sealing ring is formed of a deformable material and is provided on its inner sealing surface with a plurality of annular ribs which deform when compressed inwardly into sealing engagement with the surface of the pipe. A filler compound that is initially, at least, sufficiently flowable to be injected into the channels around the sealing rings expands as it sets, compressing the sealing rings inward and forcing the ribbed inner surfaces of the rings into sealing engagement with the pipes.

3,572,770
MOUNTING FOR A HEAT TRANSMITTER
Jakob Kagi, Wiesendangen, Zurich, Switzerland, assignor to Sulzer Brothers, Ltd., Winterhur, Switzerland
Filed Jan. 17, 1969, Ser. No. 792,046
Claims priority, application Switzerland, Jan. 23, 1968, 1027/68
Int. Cl. F16l 41/00, 13/02
U.S. Cl. 285—158 11 Claims



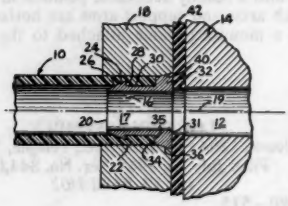
The tubes of the transmitter are mounted within the tube plate by a bushing and sleeve combination. The bushing is sized to slip over the tube while the sleeve is wedged between the tube and bushing so as to secure the bushing in place. The bushing prevents erosions and rupture of the tube occuring by vibration of the tube within the tube plate and is made of a material to prevent welding to the tube plate at high temperature.

3,572,771
DRILL-COLLAR CONSTRUCTION
Fletcher Redwine, Irving, Tex., assignor to United States Steel Corporation
Filed Dec. 31, 1968, Ser. No. 788,305
Int. Cl. F16l 15/00; E21b 17/02
U.S. Cl. 285—173 2 Claims



A drill-collar construction for use in rotary drilling of wells. The individual collars are joined end-to-end with connectors which have greater fatigue resistance than the steel of the drill collars. The preferred metal for the connectors is titanium or a titanium-base alloy.

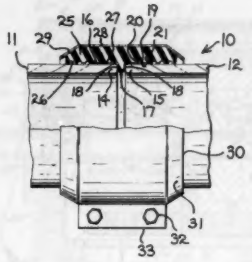
3,572,772
TUBE CONNECTOR
Karl A. Brandenberg, Hayward, Calif., assignor to The Aro Corporation, Bryan, Ohio
Filed Jan. 27, 1969, Ser. No. 794,334
Int. Cl. F16l 41/00
U.S. Cl. 285—213 3 Claims



A barbed insert is fitted into the terminal end of a plastic tube. The tube and attached insert are then positioned through a hole in a plate. The insert is chamfered at one end to engage a counterbore opening in the plate and hold the plastic tube and attached insert in a fixed position in the plate.

3,572,773
GLASS PIPE JOINT
William B. Read, Sylvania, Ohio, assignor to Owens-Illinois, Inc.
Filed Sept. 15, 1966, Ser. No. 579,753
Int. Cl. F16l 9/10, 21/00
U.S. Cl. 285—236 11 Claims
A pipe coupling adapted for coupling the ends of two axially aligned glass pipes. The coupling embodies a tubular

sealing gasket positioned over the exterior end portions of the pipes, an elastomeric sleeve placed exteriorly over the gasket to contact the gasket and the pipes, and a metallic

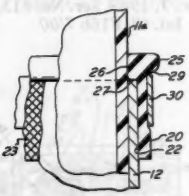


constricting band positioned around the sleeve. The band clamps the sleeve and the gasket tightly to the end portions of the aligned pipes.

3,572,774
GASKET SEAL

Clarence L. Sipler, Sipler Plastics, Inc. Central Bucks Airport Old Easton Road, Doylestown, Pa.

Filed Jan. 23, 1968, Ser. No. 699,897
Int. Cl. F16l *33/04*
U.S. Cl. 285—253 **3 Claims**

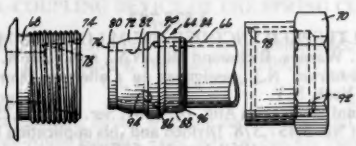


A gasket seal for use in the sealing of conduits with telescoped ends, the conduits being subjected to high vacuum flow therethrough, which seal consists of a flexible plastic band around the outside conduit with a lip extending over and beyond the outside conduit which lip engages the inner conduit and has an outer clamp extending to a rim on the lip and engaged with the lip and in overlapped relation to the end of the outer conduit to squeeze the band into engagement with the outside conduit and the lip into engagement with the inner conduit, and thereby provide an airtight seal.

3,572,775
BRAZED FITTINGS

John C. Bloom, Inglewood; Frank J. Hanback, Palos Verdes; Masashi Hayase, Fountain Valley; Norman F. Robinson, Manhattan Beach, and Wayne S. Wheelock, Long Beach, Calif., assignors to McDonnell Douglas Corporation

Filed Mar. 10, 1969, Ser. No. 805,594
Int. Cl. F16l *13/08*
U.S. Cl. 285—287 **2 Claims**

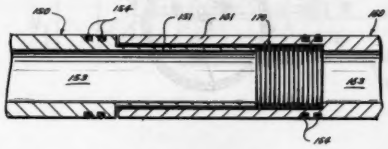


Metal sleeves joined to metal tubing by brazing or welding processes permit the tubing to be removably secured to fittings in piping systems. Similarly, permanent brazed connections between tubing and fittings eliminates a substantial number of potential leak points and a saving in weight is accomplished.

3,572,776
FLUID FLOW APPARATUS

David P. Herd, Houston, and Charles D. Morrill, Bellaire, Tex., assignors to Rockwell Manufacturing Company, Houston, Tex.

Filed Feb. 27, 1969, Ser. No. 802,926
Int. Cl. F16l *15/02*
U.S. Cl. 285—302 **5 Claims**

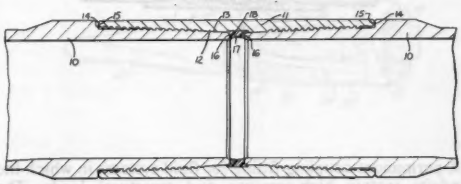


Fluid flow apparatus for passage of through-flowline tools comprising two conduits having a common flow axis and adapted for limited longitudinal movement relative to each other while maintaining flow fluidtight communication therebetween provided with means for preventing the stopping of through-flowline tools within the conduits at any position of longitudinal movement. One embodiment comprises alternate longitudinal fingers and open end slots cut in the end of each conduit, the fingers of each conduit engaging the slots of the other conduit. Another embodiment comprises a spring mounted in an enlarged bore portion of one of the conduits and bearing against the end of the other conduit which telescopically engages the enlarged bore portion.

3,572,777
MULTIPLE SEAL, DOUBLE SHOULDER JOINT FOR TUBULAR PRODUCTS

Thomas L. Blose, Bradfordwoods, and Emilio A. Pontill, Conway, Pa., assignors to Armco Steel Corporation, Middletown, Ohio

Filed May 5, 1969, Ser. No. 821,842
Int. Cl. F16l *25/00*
U.S. Cl. 285—334 **8 Claims**



A threaded and coupled, or integral connection for tubular products (such as tubing, casing and drill pipe used in oil country service) comprising complementary tapered sealing surfaces, an annular external shoulder on the male element, and an annular internal shoulder on the female element, at least one of which shoulders provides a secondary seal.

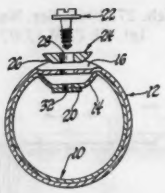
3,572,778
PIPE COUPLING

Thomas R. Cassel, Birmingham, Mich., assignor to Thomas R. Cassel; Kenneth W. Cassel; R. Nelson Cooksey; William E. Neighbors, fractional part interest to each and Keevin J. Cassel

Continuation-in-part of application Ser. No. 657,823, Aug. 2, 1967, now abandoned. This application May 26, 1969, Ser. No. 837,985
Int. Cl. F16l *13/14*
U.S. Cl. 285—382 **35 Claims**

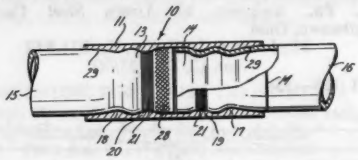
A pipe coupling as disclosed in which two pipe sections are joined together with the end of one being preformed and in-

serted into the end of the other. The inner pipe section is provided with a deformation so that its outer peripheral length is not substantially less and may be greater than the inner peripheral length of the outer pipe section. Force applying means, such as a threaded fastener, is adapted to act between the inner and outer pipe sections to apply a drawing



force in a vicinity of the deformation, whereby the walls of the pipe sections are caused to conform in close engagement. Securing means are provided to maintain the inner pipe section in compressive stress and the outer pipe section in tensile stress whereby a mechanically strong and fluid tight joint is produced.

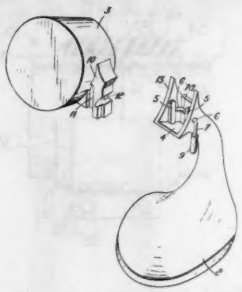
3,572,779
COUPLING FITTING FOR CONNECTING TWO PARTS
James A. Dawson, Hazelwood, Mo., assignor to McDonnell Douglass Corporation, St. Louis, Mo.
Filed June 24, 1968, Ser. No. 739,528
Int. Cl. F16l *13/14*
U.S. Cl. 285—382.2 **9 Claims**



A permanent coupling fitting for fluid systems in which the conduits sustain high-pressure and structural loads. The fitting is formed with an exterior shape of predetermined configuration and a standard internal shape to receive standard shaped parts or tubing. Swaging means is applied to compress the exterior shape of the fitting inwardly so that the exterior becomes substantially cylindrical and the interior assumes the exterior configuration so as to force the tubing to conform and establish leak resistant and structural strength characteristics.

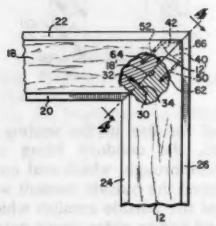
3,572,780
LOCKING DEVICE
David Levin, Nassau, Bahamas, assignor to Abbey Manufacturing Company Limited, Dublin, Ireland
Filed July 15, 1969, Ser. No. 841,922
Claims priority, application Ireland, July 16, 1968, 851/68
Int. Cl. F16b *9/00*
U.S. Cl. 287—20 **5 Claims**

A locking device for further securing together two component parts of a domestic appliance in which one of the component parts is provided with a retaining recess with a rotatable bar mounted therein and the second component is provided with an insert member having a groove therein, operation of the device being carried out by locating the in-



sert member in the retaining recess and engaging the bar member in the groove of the insert member.

3,572,781
PICTURE FRAME JOINT
Douglas Merrilees, Northfield, and Quentin A. Malmquist, Post Mills, Vt., assignors to Weatherboard Products, Inc., Wolcott, Vt.
Filed Apr. 7, 1969, Ser. No. 813,920
Int. Cl. F16b *7/00*
U.S. Cl. 287—20.92 **3 Claims**

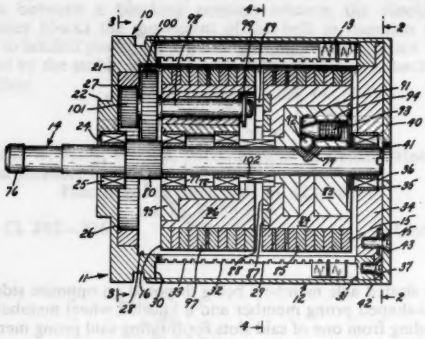


A picture frame includes a pair of members having beveled ends which are adapted to be positioned adjacent one another to form a miter joint. Dowel means is positioned within aligned holes formed in the beveled ends. Each of these beveled ends includes a groove formed therein, the grooves being aligned with one another, the members each also having a hole formed therein substantially at one end of the groove therein. A holding means in the form of a one-piece generally U-shaped resilient metal clip is provided, the legs of this clip fitting within the holes formed in the members, and the connecting portion of the clip between the legs being positioned within the aligned grooves.

3,572,782
MULTI-SPEED ENCODER DRUM LOCKING MEANS
Peter J. Waznys, Richmond Hill, N.Y., and John A. Garrido, Englishtown, N.J., assignors to Collectron Corporation, New York, N.Y.
Original application Aug. 14, 1967, Ser. No. 660,252, now Patent No. 3,457,378. Divided and this application Feb. 17, 1969, Ser. No. 825,464
Int. Cl. F16d *1/06*
U.S. Cl. 287—52.08 **1 Claim**

A multispeed digital encoder employing a plurality of code

patterns, one of which moves at a submultiple of rotation with respect to the other, and including improved means

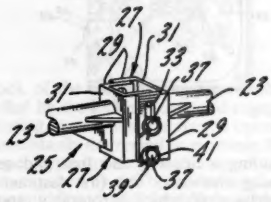


facilitating assembly, adjustment of brushes and mechanical durability.

3,572,783
CONNECTOR

Harry L. Sosalla, Sac City, Iowa, assignor to Noble Manufacturing Company, Sac City, Iowa

Continuation of application Ser. No. 525,727, Feb. 7, 1966, now abandoned. This application Sept. 18, 1968, Ser. No. 766,364
Int. Cl. F16c *11/00*
U.S. Cl. 287—99 **10 Claims**



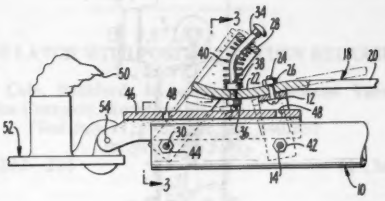
A connector for joining elongated members such as harrow crossbars which connector may be selectively adjusted to function as a rigid connector, a hinge connector or a hinge connector permitting limited vertical movement of the harrow crossbars relative to each other. The connector includes a U-shaped member connected to an end of each crossbar with one U-shaped member adapted to telescope in the other. Rectilinearly elongated and circular apertures are formed in the arms of the U-shaped members with similar openings in the arms of each U-shaped member being aligned. When the U-shaped members of adjacent crossbars telescope, similar openings in the arms of each member will be in alignment. Pivot pins may be installed through either the rectilinearly elongated or circular apertures or both to selectively connect the crossbars.

3,572,784
QUICK-COUPLING DEVICE OF THE SPRING CLAMP TYPE

Andrew L. Pansini, 180 Los Cerros Drive, San Rafael, Calif.

Filed Mar. 24, 1969, Ser. No. 809,917
Int. Cl. B25g *3/36*
U.S. Cl. 287—103 **5 Claims**

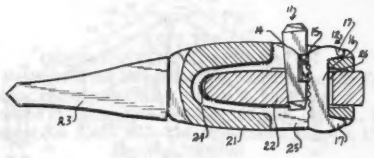
A quick-coupling device whereby various tools and the like having half-round adapter ends may be quickly clamped to and quickly unclamped from a shaft or pole, the same being characterized by a pair of yokelike brackets pivotally connected to the shaft or pole, a lever attached to one bracket and pivotal therewith, the lever having tool clamping means adjacent one end thereof which is located between the brackets, the other end of the lever being adapted to be moved toward and away from the shaft or pole, and a compression spring disposed between the other bracket and the tool clamping means of the lever to urge such means into clamping engagement with an adapter end of a tool.



3,572,785
CONNECTING APPARATUS FOR POWER SHOVEL TOOTH ADAPTERS

Darrell R. Larson, Salt Lake City, Utah, assignor to Minneapolis Electric Steel Castings Company, Minneapolis, Minn.

Filed Dec. 22, 1969, Ser. No. 887,065
Int. Cl. B25g *3/36*
U.S. Cl. 287—103 **6 Claims**



The disclosure is directed to apparatus for connecting a digger tooth adapter to an excavating shovel. The apparatus consists of a C-shaped block having undulations formed on its back side, and a wedge having a resiliently mounted block-engaging member of the face of which is also undulated to cooperate with the block. The adapter and lip of the shovel fit together in overlapping relation, with openings in each aligning to form a passage which receives the block and wedge.

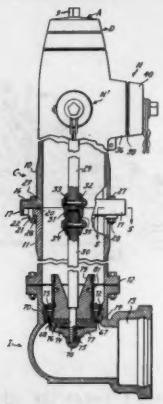
3,572,786
FIRE HYDRANT

John T. Dunton, 134 School Street, Bradford, Pa.

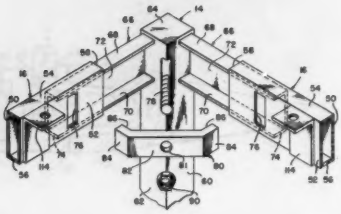
Continuation of application Ser. No. 678,136, Sept. 20, 1967, now abandoned , which is a division of application Ser. No. 421,580, Jan. 18, 1965, now abandoned. This application Aug. 18, 1969, Ser. No. 853,592
Int. Cl. F16d *9/00*
U.S. Cl. 287—108 **5 Claims**

A fire hydrant having a frangible stem operative to open

and close the hydrant. The stem is comprised of tandem, axially aligned, noncircular shafts secured together by an interlocking sleeve. The sleeve provides a zone of increased fracture susceptibility located overlying one or the other shafts.



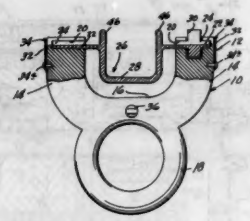
3,572,787
KNOCKDOWN JOINT CONSTRUCTION FOR FURNITURE FRAMES AND OTHER STRUCTURES
Gerald L. Timmerman, and Paul S. Timmerman, 5500 4th Ave South, Seattle, Wash.
Filed Oct. 8, 1969, Ser. No. 864,703
Int. Cl. F16b *7/00*
U.S. Cl. 287—189.36 **15 Claims**



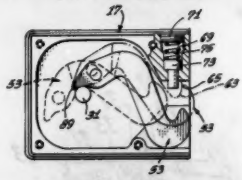
Joint construction in which individual corner members such as table legs are provided with sleeve guide extensions to receive tubular connecting apron or frame members. A bolt extends inwardly from the leg between the sleeve guides and receives a retainer member which engages the apron members to hold the apron members firmly in position on the sleeve guides and against the leg. A locking means holds the retainer in place. Panels or surfaces can then be connected to the apron or frame members.

3,572,788
PORTABLE DEVICE FOR KNOTTING CORD AND THE LIKE
Shannon F. Cruzan, East 9605 Maxwell Ave., Spokane, Wash.
Filed July 18, 1969, Ser. No. 843,050
Int. Cl. D03j *3/00*
U.S. Cl. 289—17 **9 Claims**

A device for knotting a cord and the like comprising a substantially U-shaped element having a handle and with resilient leaf springs disposed on opposite sides of the leg members of the U-shaped element, with said element having slots therein for receiving slotted axle members therein with the slotted axle members being disposed on opposite sides of a U-shaped prong member and a knurled wheel member extending from one of said slots for rotating said prong member and slotted axle members.

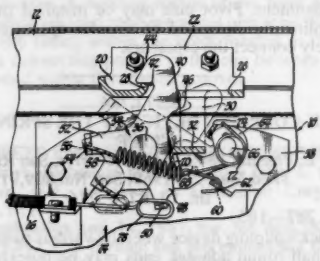


3,572,789
LATCH
Robert M. McClintock, Northridge, and Howard T. Knox, Northridge, Calif., assignors to Fridair Industries, Redondo Beach, Calif.
Filed Apr. 17, 1969, Ser. No. 817,058
Int. Cl. E05c *5/00*
U.S. Cl. 292—114 **12 Claims**



A latch including a housing and first and second interlockable fastening elements. The first fastener element is mounted on a drive shaft which is rotatably mounted within the housing. A safety lock is mounted in the housing to prevent movement of the first fastener element to a locked position unless the second fastener element is in position to be engaged by the first fastener element.

3,572,790
AUXILIARY HOOD LATCH
Harley L. Kapanka, Utica, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Mar. 5, 1969, Ser. No. 804,548
Int. Cl. E05c *19/12*
U.S. Cl. 292—125 **3 Claims**



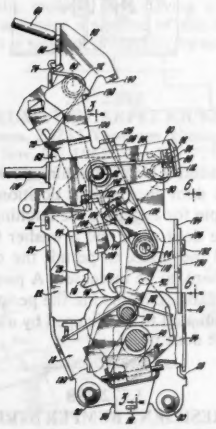
An auxiliary hood latch includes a striker mounted to the hood and a bolt mounted pivotally to the body for movement

between latched and unlatched positions. The bolt engages with the striker in the latched position to cooperate with the primary latch in holding the hood in closed position. A blocking member is pivotally mounted to the body for movement between a blocking position wherein the blocking member blocks the movement of the bolt to maintain the bolt in latched position and an unblocking position, when engaged by the striker, to permit the bolt to move to unlatched position.

3,572,791
CLOSURE LATCH

Charles W. Foley, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 16, 1969, Ser. No. 825,340
Int. Cl. E05c *3/26*
U.S. Cl. 292—216 **9 Claims**

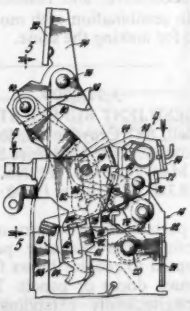


A door lock of the freewheeling type includes a holding lever controlled by the locking lever and engageable with the outside operating lever when the door is open and the pushbutton is momentarily depressed to maintain the intermittent link in its upper bypass position with respect to the detent. A transfer lever engaged by the bolt releases the holding lever when the door is closed and the bolt reaches latched position. If the pushbutton is not momentarily depressed before the door is closed, the lock automatically undogs.

3,572,792
CLOSURE LATCH

Charles W. Foley, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 27, 1969, Ser. No. 828,131
Int. Cl. E05c *3/26*
U.S. Cl. 292—216 **3 Claims**

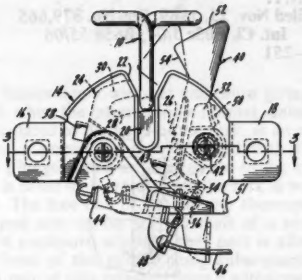


A door lock of the freewheeling type includes a locking lever movable between locked and unlocked positions to move the intermittent link between uncoupled and coupled positions. An abutment member carried by the locking lever is moved to an engaging position with respect to the detent when the locking lever is in locked position to thereby provide for automatic reconnecting. A set lever controlled by the outside operating means is operable to move the abutment member to a bypass position to provide keyless locking. Momentary actuation of the outside operating means is all that is required.

3,572,793
HOOD LATCH WITH POSITIVE RETURN RELEASE LEVER

Clair I. Cole, Rockford, Ill., assignor to Atwood Vacuum Machine Company, Rockford, Ill.

Filed July 11, 1969, Ser. No. 840,957
Int. Cl. E05c *3/02*
U.S. Cl. 292—216 **11 Claims**

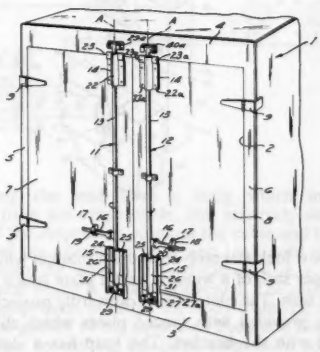


A hood latch for use in locking the hood of an automobile to the body which may be released from the driving compartment. The latch includes a plunger, normally mounted on the hood of an automobile, and a latching assembly, normally positioned on the body. The latching assembly includes a catch which holds the plunger in a locked position and a release member which releases the catch. The release lever is positively returned to its initial position by movement of the plunger in and out of the latching assembly.

3,572,794
DOOR-FASTENING APPARATUS

John V. Pastva, Parma Heights, Ohio, assignor to The Eastern Company, Cleveland, Ohio

Continuation of application Ser. No. 564,105, July 11, 1966, now Patent No. 3,484,127. This application Jan. 10, 1969, Ser. No. 790,398
Int. Cl. E05c *3/04*
U.S. Cl. 292—218 **17 Claims**



Door-fastening apparatus, particularly well suited for fastening in closed position the rear doors of truck bodies,

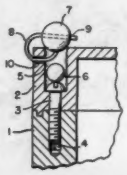
comprises a shaft and its actuating means mounted on the door, a keeper lock member mounted on the door frame, and a latch lock member, actuatable by rotation of the shaft, mounted on the door. The keeper member has two spaced projecting members of which one has a stem portion and a transverse portion, and the other of which has a free end portion. The latch member has two forks one of which engages beneath the transverse portion of the first projecting member in straddling relation and the other of which straddles the second projecting portion. The door also carries a member having an extension portion that overlaps the door frame to prevent inward movement of the door. This member preferably extends around the keeper member and is engaged by the forked portion of the latch member when the latch member is in locking engagement.

3,572,795

TAMPER RESISTANT SEAL

James Y. Howard, Spencerport, and Loren R. Springett, Rochester, N.Y., assignors to General Signal Corporation, Rochester, N.Y.

Filed Nov. 25, 1969, Ser. No. 879,665
Int. Cl. E05c *5/04;* **B65d** *55/06*
U.S. Cl. 292—251 **4 Claims**



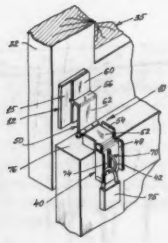
A tamper resistant seal for restricting access to a removal fastener in a receptacle has been provided. A loose fitting removal insert lodged in the receptacle covers the cross section of the receptacle and fastener and a sealing member passing through a hole in the sidewall of the receptacle and at the cross section of the receptacle restricts the removal of the insert and the sealing member must be broken to give access to the fastener.

3,572,796

WINDOW LOCKING DEVICE

Maurice A. Willner, 61 Greenway Road, New London, Conn.

Filed May 22, 1969, Ser. No. 826,809
Int. Cl. E05c *19/08, 19/18*
U.S. Cl. 292—281 **10 Claims**



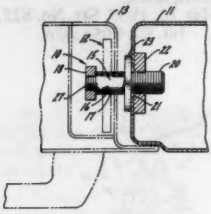
A window lock assembly includes a bracket which attaches to the upper sash of a window, and a plate which attaches to the lower sash. The plate has an outwardly projecting U-bolt. A hasp is provided with spaced plates which slide into engagement with the bracket. The hasp has a slotted hinged tongue which engages on the U-bolt. A padlock can be engaged on the U-bolt to lock the parts of the assembly together.

3,572,797

STRIKER FOR USE WITH A VEHICLE LATCH

Harry J. Shay, Rockford, Ill., assignor to L.W. Menziner Trustee, Rockford, Ill.

Continuation of application Ser. No. 614,196, Feb. 6, 1967, now abandoned. This application Apr. 17, 1969, Ser. No. 817,294
Int. Cl. E05b *15/02*
U.S. Cl. 292—341.12 **6 Claims**



A striker for coacting with a latching device to hold an automotive vehicle door in a closed position. The striker includes a keeper pin for engaging the latching device, a shank threaded into the door post, and a washer formed integrally with the pin and the shank to permit the cross section and strength of the shank to be increased. A pair of diametrically opposed driving flats are formed in the peripheral edge of the washer and are adapted to be engaged by a tool for threading the shank into the door post.

3,572,798

RESILIENT BUMPER STRIP

Alex Kunevicius, Independence, Ohio, assignor to Custom Trim Products, Inc., Cleveland, Ohio

Original application Dec. 13, 1966, Ser. No. 601,473, now Patent No. 3,439,950, dated Apr. 22, 1969, which is a continuation-in-part of application Ser. No. 477,273, Aug. 4, 1965, now abandoned. Divided and this application Oct. 31, 1968, Ser. No. 772,125
Int. Cl. B60j *19/00;* **B60r** *5/04;* **B61f** *19/04*
U.S. Cl. 293—1 **2 Claims**

A protective decorative, and resilient buffer accessory molding for and in combination with motor vehicles and the like and a method for making the same.

3,572,799

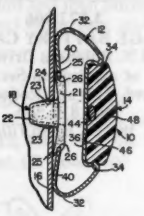
RESILIENT BUFFER STRIP

Robert E. Truesdell, 887 Croyden St., Rochester, Mich., and William H. Nienstedt, 5202 Yorkshire St., Detroit, Mich.

Filed Mar. 24, 1969, Ser. No. 809,585
Int. Cl. B32b *5/00;* **B60r** *19/08;* **E04b** *1/62*
U.S. Cl. 293—1 **11 Claims**

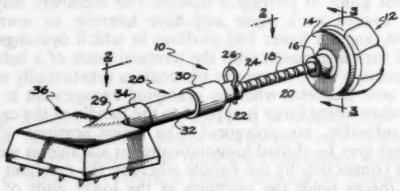
This invention pertains to an exterior molding structure for use on automobile doors and side panels as a resilient bumper strip adapted to receive blows from metallic bodies striking against such doors or panels. The bumper strip is formed of a longitudinally extending metallic molding, adapted to be secured to the panels by retaining members or an adhesive, and a longitudinally extending medially disposed

strip of plastic material having an outer surface projecting beyond the plane of the metallic-molding strip and secured thereto by a welded element substantially embedded within



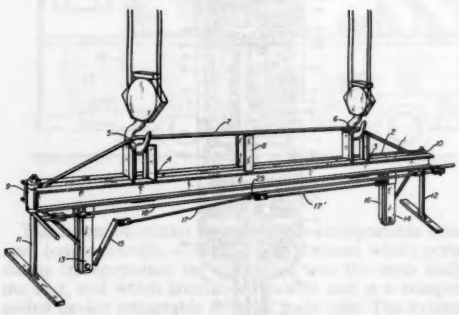
the mass of plastic material and having a surface portion disposed closely adjacent a surface of the metallic molding strip with which it is welded, preferably by series welding.

3,572,800
PNEUMATIC CARPET KICKER
Anthony J. Graziano, 23211 Vanowen, Canaga Park, Calif.
Filed Nov. 21, 1968, Ser. No. 777,675
Int. Cl. A47g *27/04*; **B26f** *1/32*; **F04f** *21/20*
U.S. Cl. 294—8.6 **2 Claims**



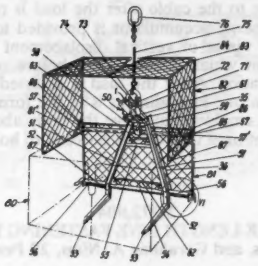
A shock absorbing carpet kicker comprising a cylindrical housing, a head for engaging a carpet affixed to said housing, means within said housing for absorbing shock, an adjustable shaft connected to said means within said housing for absorbing shock, and, a protective pad affixed to said shaft for absorbing the initial shock which is transmitted to said shock absorbing means within said housing.

3,572,801
MATERIAL HANDLING DEVICE FOR OPEN CRATING
Harry S. Howard, 1403 W. Archer St., Tulsa, Okla., and Audie E. Cantrell, 5909 South 89th St. West, Tulsa, Okla.
Filed Mar. 3, 1969, Ser. No. 803,721
Int. Cl. B66c *1/22*, *1/28*
U.S. Cl. 294—67 **1 Claim**



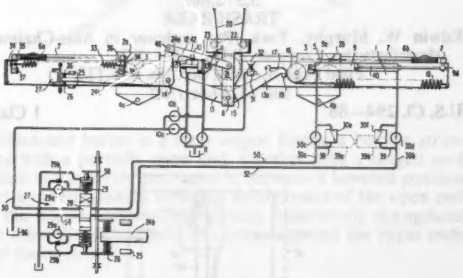
A material handling device suitable for use with open crating which includes switching means for automatically positioning the lower carrying members to a lifting position or a nonlifting position.

3,572,802
FORK LOADER WITH LIFT-CONTROLLED ENCLOSURE
Viktor Zupancic, Hubadova 7a, Ljubljana, Yugoslavia
Filed Nov. 15, 1967, Ser. No. 683,239
Int. Cl. B66c *1/00*
U.S. Cl. 294—67 **12 Claims**



A fork loader has a wire-net enclosure giving access to a lifting fork when the latter is in its normal, unloaded state. A clevis articulated to the head of the fork, at an acute angle to the axis of a pneumatic cylinder rigid with the fork, acts through a plunger upon an air cushion in the cylinder when the clevis is lifted by a crane while the fork is weighted down by a load. The free end of the plunger thereupon releases a sickle-shaped arm on the pivotal shaft of a swingable front part of the enclosure whereby that part is allowed to drop down in front of the pallet, being subsequently locked in place by a pair of pins released from a withdrawn position by a further advance of the plunger into engagement with a spring-loaded camming lever.

3,572,803
METHOD AND APPARATUS FOR LIFTING A LOAD WITH A CRANE CABLE OR THE LIKE
Wilhelmus Antonius Maria Pompe, Tolhuislaan 4, Den Dolder, Netherlands
Continuation-in-part of application Ser. No. 581,832, Sept. 26, 1966, now abandoned. This application Nov. 7, 1968, Ser. No. 774,034
Int. Cl. B66c *1/00*
U.S. Cl. 294—81 **47 Claims**



Suspending the load from a body which in turn is suspended from the crane cable, and relatively shifting the positions of the suspension point on the cable and the center of gravity of the combined body and load until in vertical alignment with the body and load disposed in a predetermined position which is usually horizontal. The relative shifting of the suspension point of the body from the cable and the center of gravity of the combined body and load may be effected either by shifting the cable suspension point or by shifting the load along the body. In addition it may be accomplished by counterweights movable along the body. In certain embodiments, a control arm is movably mounted on the body to sense the eccentricity of the load suspended from the body

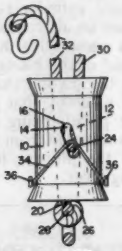
when the body and its load are lifted by the crane cable. Upon sensing the eccentricity, the control arm is employed to actuate a device such as a fluid motor to bring the cable suspension point and the combined center of gravity of the body and load into vertical alignment with each other. In another embodiment, the eccentricity of the load suspended from the body is sensed by a liquid level device mounted on the body to control a motive device employed in producing the alignment. In order to restore the body in a balanced position relative to the cable after the load is released from the body, an energy accumulator is provided to be charged with energy by virtue of vertical displacement of the cable suspension point which occurs either before or during the alignment operation. After the load is released the charged energy which in one embodiment is in the form of an energized spring, is employed to move the body about the cable suspension point until the body is restored to horizontal position.

3,572,804

VARIABLE LENGTH LINE FASTENING DEVICE

Robert C. Nims, and Geraldine A. Nims, 29 Peach St., South Barre, Mass.

Filed Apr. 16, 1969, Ser. No. 816,685
Int. Cl. F16g *11/14, 11/04*
U.S. Cl. 294—82 **4 Claims**



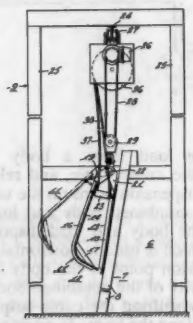
A blocklike member having a tapering longitudinal through passage, a transverse, intersecting slot on an incline relative to the axis of the passage, a doubled cord having its two ends extending through the passage and extending out both ends thereof, a ring or ringlike member through which the cord passes at the point of doubling, and a cord locking cross rod in the slot.

3,572,805

TRASH RAKE

Edwin W. Murphy, York, Pa., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed Sept. 4, 1969, Ser. No. 855,112
Int. Cl. B66c *1/00*
U.S. Cl. 294—88 **1 Claim**



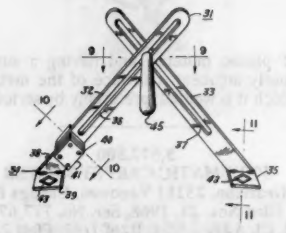
The trash rake employs a double-acting hydraulic cylinder positioned between the rake teeth and rake tines. The hydraulic cylinder may be activated to hold the rake in any number of positions between the fully opened and fully closed positions. The rake is positively held in any of the adjusted positions due to the pressurized hydraulic fluid in the cylinder.

3,572,806

STORAGE BATTERY CARRIERS

John F. Sivadon, 704 N. Robinson Drive, Waco, Tex.

Continuation-in-part of application Ser. No. 790,559, Jan. 13, 1969, now abandoned. This application Mar. 13, 1969, Ser. No. 812,546
Int. Cl. B25b *1/08*
U.S. Cl. 294—92 **5 Claims**



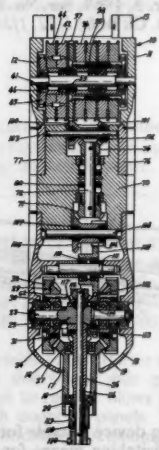
A storage battery carrier having a pair of members pivotally connected to each other and, if desired, with one of the members being of greater length and projecting above the pivot point to provide a handle. The members may be biased toward each other and have laterally or inwardly directed, angular lower end portions in which openings are formed for engagement with the terminal posts of a battery. The openings have transverse dimensions substantially equal to the post diameter whereby cramping engagement is provided when lifting force is applied to the handle of the carrier and, preferably, are polygonal. The major portions of the members may be slotted longitudinally for slidable as well as pivotal connection by the handle whereby the resultant vector of forces holds the openings at the lower ends of said members engaged with the terminal posts.

3,572,807

ROTARY TONG SQUEEZE SYSTEM

Lester W. Haaker, and Demetrius G. Jelatis, Red Wing, Minn., assignors to Central Research Laboratories, Inc., Red Wing, Minn.

Continuation-in-part of application Ser. No. 814,265, Apr. 8, 1969, now abandoned. This application June 6, 1969, Ser. No. 830,950
Int. Cl. B66c *1/00*
U.S. Cl. 294—106 **10 Claims**



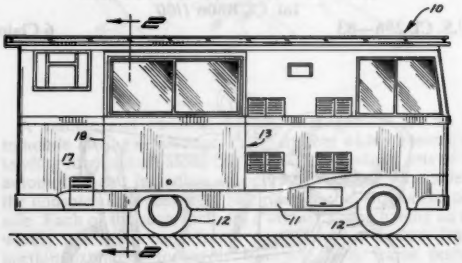
A wrist joint for a remote control manipulator having a direct two-way drive rotary tong squeeze system. The rotary

tong squeeze system replaces that utilizing a single linear motion tape or cable to close the tong and springs to return to open position. The present wrist joint allows the tong to be driven in both the opening and closing directions using a pair of opposing linear elements to transmit motions from the master arm to tape drums and then through differential gears to the operating members of the tong assembly.

3,572,808
LIFTING TONGS
Boyd Columbus Miller, P. O. Box 1566, Salisbury, N.C.
Filed Nov. 12, 1968, Ser. No. 774,795
Int. Cl. B66c *1/00*
U.S. Cl. 294—118 **2 Claims**

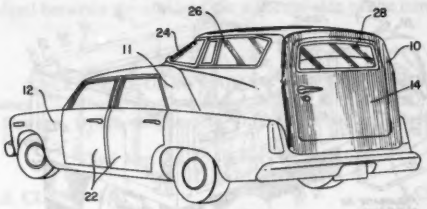
The present invention is directed to an improved lifting device for lifting steel beams and girders such as the type used in heavy construction work and comprises a scissorslike pair of tongs with inturned flanges that are so formed as to close around one flange of a beam for lifting and transferring the beam, properly oriented, into position. A latch holds the arms of the tongs apart when no load is being carried, as for example, after a load has been deposited.

3,572,809
EXPANSIBLE MOBILE HOME AND FITTINGS THEREFORE
Arlo T. Buland, 1012 12th St, Moorhead, Minn.
Filed Nov. 26, 1968, Ser. No. 786,800
Int. Cl. B60p *3/32*
U.S. Cl. 296—23 **4 Claims**



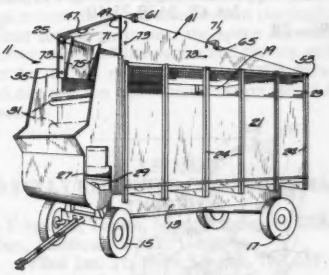
This invention relates to a mobile or transportable housing unit, having laterally extensible side portions, which portions during transportation are collapsible into the main body of the unit, and which laterally extensible unit is a completely sealed device retractable into the main unit. The extensible portions of the unit further include seating and bedding structures, which are adjustable to accommodate and provide a plurality of positionable elements adaptable for either sitting or sleeping purposes.

3,572,810
AUTOMOBILE OPERATOR'S CABIN
Walter W. Arakelian, Rte 3A, North Billerica, Mass.
Filed Dec. 23, 1968, Ser. No. 786,018
Int. Cl. B62d *33/08*
U.S. Cl. 296—24 **6 Claims**



An elevated cabin is provided at the rear of a passenger automobile to separate the operator from the passenger space and to provide him with an all-around view. The cabin may be part of the original construction of the automobile or may be made to be attached to the rear of a completed automobile.

3,572,811
FARM WAGON WITH HINGED ROOF
John E. Kasten, 136 Concord Lane, West BND, Wis.
Filed Aug. 6, 1969, Ser. No. 847,909
Int. Cl. B62d *33/08*
U.S. Cl. 296—26 **10 Claims**

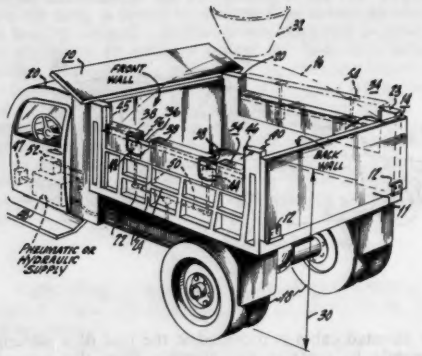


Disclosed herein is a farm wagon having a boxlike structure with a partially open end, together with a hinged roof which is selectively positionable between a lowered position and a raised position affording enlargement of the open end of the wagon and which materially transversely strengthens the sidewalls of the boxlike structure adjacent the upper ends and the open end.

3,572,812
RETRACTABLE SIDEBOARDS
John Norcia, R.F.D.4 Box 451, North Brunswick, N.J.
Filed Nov. 29, 1968, Ser. No. 779,969
Int. Cl. B62d *33/08*
U.S. Cl. 296—26 **8 Claims**

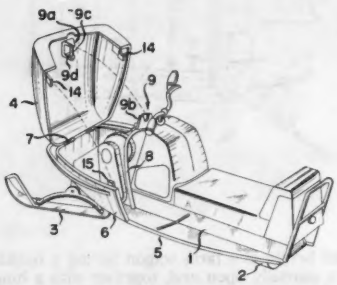
A truck, having a boxlike load accommodating structure, has mounted on each of the sides of the structure near the top surfaces thereof, a retractable sideboard assembly. The sideboard assembly has an inner member secured to the top of the sides of the box structure. The inner member contains piston units for vertically moving a second cover member slideably mounted over said first member. The pistons within

said piston units are activated from a valve controlled energy source, such as a pneumatic or hydraulic unit, and serve to raise the second members, which effectively increases the



height of the truck sides, protects the load and the operator, without substantially decreasing the effective legal payload of the vehicle.

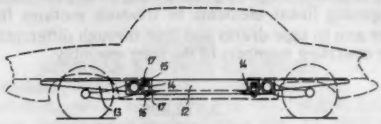
3,572,813
DEVICE FOR ENGAGING A FRONT COVER WITH A SNOW VEHICLE BODY
Norio Takada, Hamamatsu-shi, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Hamakita-shi, Shizuoka-ken, Japan
Filed Mar. 25, 1969, Ser. No. 810,093
Claims priority, application Japan, Mar. 30, 1968, 43/25101
Int. Cl. B62d *25/10*
U.S. Cl. 296—28 **7 Claims**



A front bonnet having a rear open end is removably engaged with the rear part of each front side frame of a vehicle body by coupling members so that the bonnet is reinforced in rigidity so as to assure a good connection with the vehicle body.

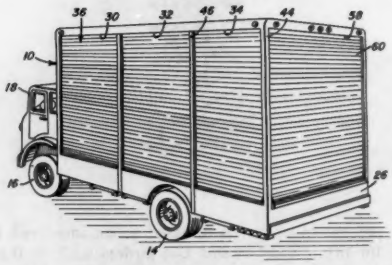
3,572,814
DEVICES FOR INTERCONNECTING THE BODY AND CHASSIS OF VEHICLES
Raymond A. Ravenel, Paris, France, assignor to Societe Anonyme Andre Citroen, Paris, France
Filed Sept. 11, 1968, Ser. No. 759,061
Int. Cl. B62d *27/04*
U.S. Cl. 296—35 **4 Claims**

The connecting device between a body and a sprung chassis of a vehicle of which the body fits freely in an aperture of the chassis comprises, at their interfitting portions, connecting members providing a pendular suspension of the body in



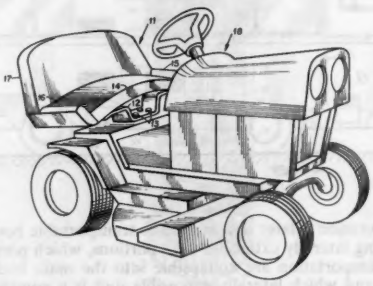
relation to the chassis in the longitudinal direction of the vehicle and permitting a limited movement of the body.

3,572,815
VAN BODY WITH OVERHEAD SIDE DOORS
Ralph Hodges Hackney, Washington, N.C., assignor to J. A. Hackney & Sons, Inc.
Filed July 14, 1969, Ser. No. 841,529
Int. Cl. B60j *5/08*
U.S. Cl. 296—40 **5 Claims**



A van-type truck body having rear doors to enable a preloaded rack or cart of a size commensurate with the internal dimensions of the body to be loaded into the body combined with rollup-type overhead doors along each side of the van body to enable access to both longitudinal sides of the preloaded rack or cart throughout the longitudinal dimension thereof so that items to be delivered may be removed through the side doors. A slide-out step is provided below each side door to provide for easy access to items placed at the top of the preloaded rack or cart.

3,572,816
VEHICLE SEAT
Robert L. Brown, 322 Davis Drive, Kingston, Tenn.
Filed Mar. 12, 1969, Ser. No. 806,389
Int. Cl. B60n *1/00*
U.S. Cl. 296—63 **6 Claims**



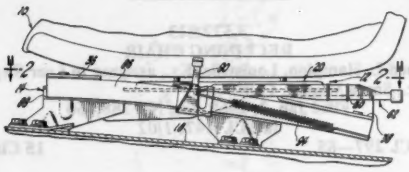
An arcuate seat for riding implements which extends transversely to the direction of travel of the implement, whereby a rider may change sitting positions along the seat when the implement moves over a nonhorizontal surface.

3,572,817

ADJUSTER MECHANISM FOR A VEHICLE SWIVEL SEAT

Albert J. Colautti, Windsor, Ontario, Canada, and Angelo Guarrasi, Harper Woods, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed July 16, 1969, Ser. No. 842,099
Int. Cl. B60n *1/04*
U.S. Cl. 296—65 5 Claims



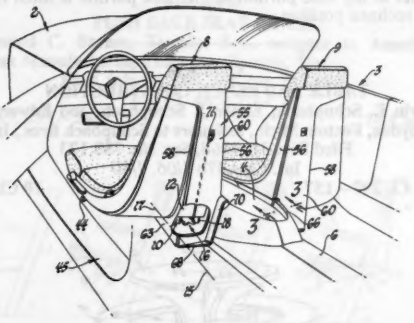
An adjuster mechanism interposed between a vehicle seat and the vehicle floor portion for supporting the seat for rotational movement about a vertical axis between a first position wherein the seat faces forwardly and a second position wherein the seat faces the vehicle door. The adjuster mechanism includes a disc-shaped member attached to the seat and having means formed thereon which cooperate with a manually operable handle for positively locking the seat in the first position and for detenting the seat in the second position.

3,572,818

VEHICLE SEAT CONSTRUCTION AND ARRANGEMENT

Thomas E. Lohr, Warren, Mich., assignor to Allied Chemical Corporation, New York, N.Y.

Filed July 22, 1969, Ser. No. 843,670
Int. Cl. B60n *1/04*
U.S. Cl. 296—65 20 Claims



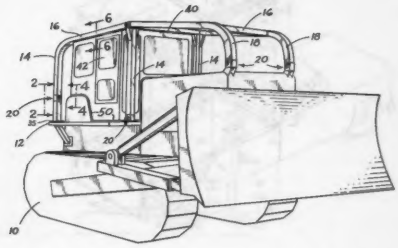
A vehicle seat construction and arrangement for an automobile having a passenger compartment with a console extending fore-and-aft along the central longitudinal axis of the automobile and including an operator's seat on one side of the console and a passenger seat on the other side of the console. Each of the seats includes a unitary frame having an upwardly extending back frame portion and a bottom frame portion extending forwardly from the back frame portion with support and adjustment mechanism for mounting the seat on the vehicle floor. The support and adjustment mechanism for the seat is mounted asymmetrically on the bottom frame portion to provide clearance between the floor and the bottom surface of the bottom frame portion on the opposite side of the fore-and-aft extending central axis of the bottom portion from the support and adjustment mechanism so that passengers in the rear do not have to straddle the support and adjustment mechanism with their feet. The seat construction further includes means defining an enclosure for the support and adjustment mechanism which includes an outer side panel extending rearwardly from the edge of the frame adjacent the support and adjustment mechanism and an inner side panel extending rearwardly from the back frame portion on the opposite side of the support and adjustment mechanism and near the upright central axis of the back frame portion with a rear panel extending between the rear edges of the side panels. The outer side panel includes an outwardly projecting flange which overlies the upper edge of the console to prevent trash and objects from becoming lodged between the seat and the adjacent side of the console.

3,572,819

ENCLOSED GUARD CANOPY FOR TRACTORS

James C. Moore, Portland, and Milton K. Leonard, Lake Oswego, Oreg., assignors to Tube-Lok Products, Portland, Oreg.

Filed Apr. 14, 1969, Ser. No. 815,613
Int. Cl. B62d *25/06*
U.S. Cl. 296—102 2 Claims



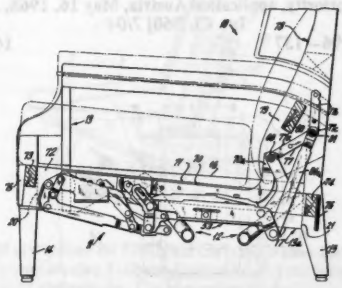
An enclosed guard canopy for tractors comprises a supporting guard frame defining an operator's cab having side openings. Sheet metal panels are hung in the openings by being secured to the guard members only. Resilient mountings mount the guard members on the tractor and flexible resilient sealing strips seal the space between the unattached lower margin of the panels and the top of the tractor. The operator in the cab thus is protected from vibration, noise and dirt and the cab structure is protected from working stresses.

3,572,820

TV AND FULLY RECLINING CHAIRS AND HARDWARE THEREFOR

Arlen H. Ferguson, Tupelo, Miss., assignor to Mohasco Industries, Inc., Amsterdam, N.Y.

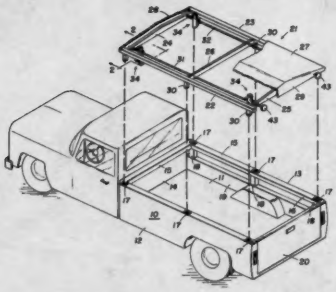
Filed Jan. 21, 1969, Ser. No. 792,419
Int. Cl. A47c *1/035*
U.S. Cl. 297—84 16 Claims



Two tubular cross braces interconnect the arms of a chair frame, to support the load on the seat and to keep the arms from spreading apart. The braces are at opposed upwardly divergent 45° angles to get the upper mounting points of the

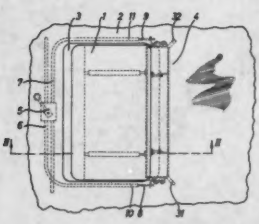
braces to the frame, further apart to get maximum bearing area. The braces have a middle downward bend to provide clearance for a soft seat and to strengthen the braces. The cross braces support reclining chair linkage hardware. These linkages are provided with sequencing mechanism so arranged that the chair goes from closed upright position to an intermediate TV position before going to a fully reclined position.

3,572,821
COVER FOR TRUCK BEDS
Danial Roe Van Antwerp, R.R. #1, Mystic, Iowa
Filed July 31, 1969, Ser. No. 846,342
Int. Cl. B60j 7/10
U.S. Cl. 296—137 **7 Claims**



A removable cover for pickup truck bed is disclosed. The cover includes a rigid frame with stakes, the frame seating upon the top edges of the bed and the stakes fitting into recesses typically provided therein for that purpose. A pair of catches carried wholly by the cover along each side thereof engage the flanges typically provided along the two sides of the truck bed, the catches along each side being conjointly operated by a crankshaft. The catches are spring biased to resiliently hold the cover to the bed, and at the same time, when the two catches along one side of the cover are released, to permit that side to be lifted against the spring pressure of the two catches along the other side. Additionally, the catches may be designed so that the rear two only may be released, whence the rear of the cover may be lifted against the spring pressure of the front two catches.

3,572,822
SLIDABLE VEHICLE ROOF ASSEMBLY
Alfred Schmid, Munich-Furstenried, West Germany, assignor to Webasto-Werk, G.m.b.H., Munich, Germany
Filed Apr. 24, 1969, Ser. No. 818,943
Claims priority, application Austria, May 16, 1968, A4701
Int. Cl. B60j 7/04
U.S. Cl. 296—137 **16 Claims**

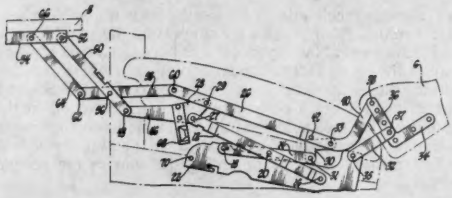


A sliding roof section for vehicles including a panel which is pivotally supported at the front, and supported at the rear by means of a support member which may move, with the roof, both horizontally and vertically so that when the rear of the panel is lowered, the panel may be slid rearwardly under the stationary part of the roof. Additionally, the rear of the panel may be moved upwardly from its normally closed position to provide ventilation.

ERRATUM

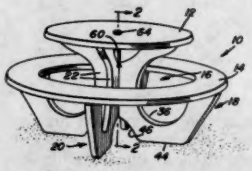
For Class 297—84 see:
Patent No. 3,572,820

3,572,823
RECLINING CHAIR
Edward L. Hampton, Louisville, Ky., assignor to Lear Siegler, Inc., Santa Monica, Calif.
Filed Jan. 3, 1969, Ser. No. 788,760
Int. Cl. A47c 1/02
U.S. Cl. 297—85 **15 Claims**



A reclining chair having relatively movable base, seat and back portions with an extensible and retractable legrest operable between an upright position with the legrest retracted, a semireclined position with the legrest extended, and a fully reclined position with the back portion tilted rearwardly with respect to the seat and base portions. Interconnecting means between the base, seat and back portions actuates the seat portion to a raised, fully reclined position with respect to the base portion as the back portion is tilted to its fully reclined position.

3,572,824
TABLE AND BENCH CONSTRUCTION
Melvin E. Schupbach; Elmer J. Schupbach, and Edward L. Boyden, Fenton, Mich., assignors to Schupbach Bros., Inc.
Filed Dec. 31, 1968, Ser. No. 788,123
Int. Cl. A47b 3/06, 7/00
U.S. Cl. 297—157 **10 Claims**

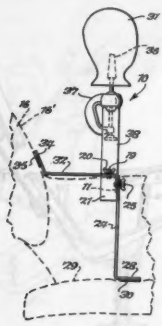


A patio-type table and bench unit comprising a pair of base members nestable in crossed interlocked relation with each other. Each base member including opposed spaced upwardly directed table supports and relatively lower upwardly directed seat supports outwardly spaced in relation to the table supports. A table top engages on and is secured to the table supports of the combined base members and a table top encircling seat is supported on and secured to the combined seat supports. Each base member is formed as a single unit and configured so as to almost completely avoid any interference with the seating of persons on the surrounding seat about the table top. A pipe section can also be incorporated into the table for the selective reception of an umbrella or the like.

3,572,825
WIG STYLING RACK

Harold L. Davis, 3649 Harlem Road, Cheektowaga, N.Y.

Filed Oct. 21, 1968, Ser. No. 769,172
Int. Cl. A47c 7/62
U.S. Cl. 297—188 5 Claims

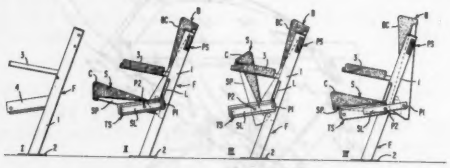


A wig styling rack for mounting on a chair having a back, a seat, and a pair of spaced arms consisting of a central portion having a pair of laterally adjustable arms for resting on said arms of said chair, a downwardly depending adjustable leg mounted on said central portion for resting on said seat of the chair for preventing pivotal movement of said body portion in a first direction, a rearwardly extending arm mounted on said central body portion for resting against the back of said chair and thus preventing pivotal movement of said central body portion in a direction which is opposite to said first direction, and a frame member extending upwardly from said central body portion for mounting a wig form at the top thereof.

3,572,826
PUSH BACK SEAT CHAIR

Raymond C. Barnes, Temple, Tex., assignor to American Desk Manufacturing Company, Temple, Tex.

Filed July 5, 1968, Ser. No. 742,881
Int. Cl. A47c 1/12
U.S. Cl. 297—249 14 Claims

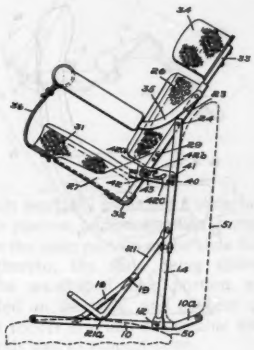


A push back seat chair has a seat mounted on two slides movable fore-and-aft of the chair in track structures on opposite sides of the chair. The track structures may be mounted on the chair frame so as not to move vertically but so that the rear portions of the track structures may swing transversely toward or away from the adjustment frame parts, thus enabling chairs to be mounted in arcuate rows of different radii. The rear parts of the slides are pivotally connected to the lower part of the chair back, the upper part of which is connected to the frame for both pivotal and vertical movements. The chair seat is pivoted on the slides and is controlled in its pivotal movement so as to occupy a position of use in which it is at a rearward-downward inclination conducive to comfort and to occupy a retracted position in which its front edge is relatively lower than when in its position of use but still not so low as to result in a forward-downward inclination. The seat pan and chair back are relatively less rigid than the frame, and have little but sufficient flexibility to permit enough warping or twisting to accommodate some misalignment of frame parts in mounting and thereby to prevent binding of relatively movable interengaging parts.

3,572,827
CHILD'S CAR SEAT

Morris C. Merelis, Brookline, and Ernest S. Sharaf, West Newton, Mass., assignors to Pyramid International, Inc., Ravenna, Ohio

Filed Oct. 15, 1968, Ser. No. 767,715
Int. Cl. A47d 1/10
U.S. Cl. 297—253 3 Claims

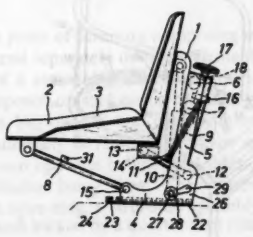


A child car seat to be attached to an automobile seat. The seat has a supporting frame with legs which engage under the back cushion of the automobile seat. The seat is pivoted on the frame and swings from a sitting position to a reclining position. Lock plate on the sides of the frame have slots which engage pins on the seat. The slots have branches in which the pins engage to lock the seat in a selected position.

3,572,828
SEAT FOR VEHICLE PREFERABLY AGRICULTURAL VEHICLE

Wilhelm Lehner, Kummersbrucker-Strasse 6, Amberg Oberpfalz, Germany

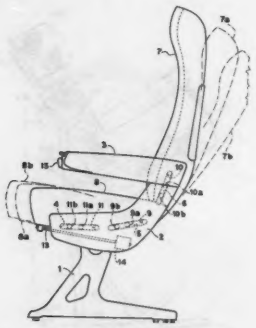
Filed Oct. 21, 1968, Ser. No. 769,346
Claims priority, application Germany, Oct. 23, 1967, P 16 30 736.1
Int. Cl. A47c 3/22
U.S. Cl. 297—308 7 Claims



The seat comprises an L-shaped carrying frame for the seat upholstery and an also L-shaped mounting frame for connecting the seat to the vehicle. The mounting frame has a rear part which forms a track for rollers carried by the carrying frame. The seat also comprises a rocker arm, which is disposed under the seat proper, and a spring mounting consisting of resilient elements and a vibration damper. The rocker arm is pivoted to the mounting frame and to the seat proper at the forward ends thereof, and the spring mounting elements are

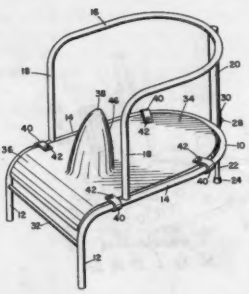
connected at one end to the rear part of the mounting frame and at the other end to a short compensating rocker arm, which is pivoted at one end to the rear part of the mounting frame and at the other end by a roller to a track, which is provided on that part of the carrying frame which is near the seat proper.

3,572,829
TILTABLE AIR PLANE SEAT
Robert L. Malitte, Paris, France, assignor to Companie Nationale Air France, Paris, France
Filed Dec. 2, 1968, Ser. No. 780,442
Int. Cl. A47c *1/032*
U.S. Cl. 297—317 **6 Claims**



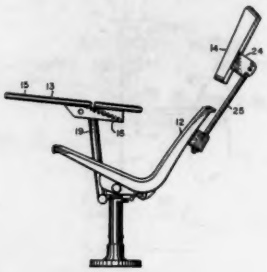
This disclosure is concerned with a seat composed of a chassis, a back and a seat, the seat and the back at least being pivoted to one another and being able to move with respect to the chassis, the shaft around which the back tilts and the pivoting shaft of the back and of the seat being movable and guided both in slides made in the chassis the length of which and the direction of which determining the movement, the movement of the seat being itself guided by a third slide whose characteristics are also coherent with the form of the assembly.

3,572,830
CHILD'S ALL PURPOSE SEAT
Arthur J. Storer, Mackay, Idaho
Filed Mar. 10, 1969, Ser. No. 805,570
Int. Cl. A47c *31/00;* **A47d** *15/00*
U.S. Cl. 297—390 **5 Claims**



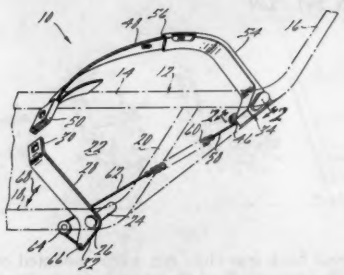
The seat has a lightweight tubular frame which surrounds the child and has fixed front legs and a telescopically adjustable rear leg, which allows the seat to be self supporting or be placed on a chair or other support. An upwardly projecting horn incorporated into the seat fits between the child's legs and prevents him from sliding forward, and the frame provides convenient means for carrying the seat with the child in place.

3,572,831
STUDY UNIT
Chester J. Barecki, Grand Rapids, and Arthur J. Hogan, Jr., Grand Rapids, Mich., assignors to American Seating Company, Grand Rapids, Mich.
Filed Apr. 21, 1969, Ser. No. 817,653
Int. Cl. A47c *1/02, 1/10*
U.S. Cl. 297—349 **6 Claims**



A planetarium chair convertible to a lecture room chair which includes a chair having a back and seat mounted on a pedestal wherein the chair can both swivel and tilt, the chair being equipped with a headrest with means interconnecting the chair back and headrest for moving the headrest from a head-supporting position to a stowed position.

3,572,832
VEHICLE PASSENGER RESTRAINT ASSEMBLY
James W. Graham, and Jonas Valukonis, Detroit, Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Aug. 18, 1969, Ser. No. 850,714
Int. Cl. B60r *21/10;* **A47c** *31/00*
U.S. Cl. 297—388 **10 Claims**



A restraint assembly enabling a vehicle passenger supported on a seat to engage plural lap belt restraining segments using only one of his hands. One of these segments is an elongated rigid member pivotally movable between a horizontal position along one side of the seat and an upright position. The other segment is a flexible belt secured to a belt retractor at the other side of the seat. The retractor is interconnected with the rigid member so that movement of the former as the flexible belt manually is pulled from the retractor to an extended position causes movement of the rigid segment from the horizontal to upright position wherein a fastener tongue formed on the rigid segment may be engaged by a buckle carried on the flexible belt.

3,572,833

VEHICLE SHOULDER HARNESS ARRANGEMENT

George M. Pavliscak, Inkster, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Mar. 6, 1969, Ser. No. 804,882
Int. Cl. B60r 21/10
U.S. Cl. 297—389 2 Claims

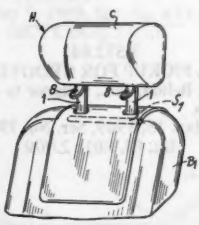
A shoulder harness type occupant restraint arrangement for a motor vehicle including an outboard belt segment having one of its ends secured to vehicle body structure above and behind a forward facing passenger seat. Carried by this belt segment is a collar slidable along the length of the belt segment and adapted to be positioned on that portion of the belt segment that is proximate the neck of a seated passenger. This collar maintains a portion of the belt segment in an arcuate configuration to prevent chafing of the belt edge against the passenger.

3,572,834

ADJUSTABLE HEAD REST FOR VEHICLE SEATS

Kurt Herzer, Karlsruhe, Durlach, and Wolfgang Mertens, Karlsruhe, Germany, assignors to Kurt Herzer, Karlsruhe, Germany

Filed Nov. 19, 1968, Ser. No. 776,990
Claims priority, application Germany, Feb. 2, 1968, P 16 80 100.6
Int. Cl. A47c 7/36, 7/42
U.S. Cl. 297—410 7 Claims



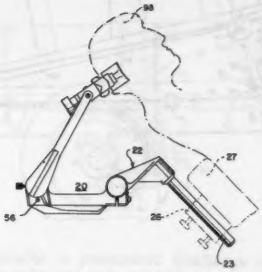
An adjustable headrest wherein the adjusting and locking means are contained within the upholstery and the manually accessible operator lever is disposed in such a manner that it constitutes no safety hazard in an automobile. The device comprises a support rack having a series of depressions along its length; a sleeve surrounding the rack and longitudinally slidable with respect thereto and securing means carried by said sleeve for immobilizing the sleeve with respect to said rack in a desired position by manipulating said accessible lever.

3,572,835

SURGICAL HEAD REST

George Kees, Jr., Alexandria, Ky., and Horst R. Hickmann, Anderson Township, Hamilton County, Ohio, assignors to Kees Surgical Specialty Company, Cincinnati, Ohio

Filed Oct. 23, 1968, Ser. No. 770,041
Int. Cl. A47c 7/36, 7/42
U.S. Cl. 297—410 6 Claims



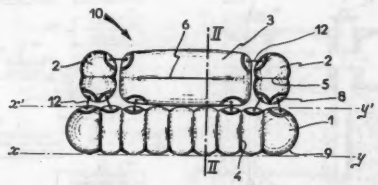
A head support assembly including a slide base having an arc-shaped main portion, an arcuate slide complementary to and mounted on the main portion of the slide base in face-to-face relation thereto, the slide being slideable circumferentially of the arc-shaped main portion, a rocker arm pivotally mounted on the slide, and resilient cup members mounted on the rocker arm and engageable with a patient's head or other body part to support same.

3,572,836

INFLATABLE PIECE OF FURNITURE

Nguyen Manh Khanh, 20, rue Leverrier, Paris, Seine, France

Filed Nov. 12, 1968, Ser. No. 774,808
Claims priority, application France, Nov. 15, 1967, Oct. 28, 1968, 128,215;170,951
Int. Cl. A47c 27/08, 27/18
U.S. Cl. 297—456 3 Claims



Inflatable piece of furniture comprising several gastight independent and separately dilatable elements, interconnected by means of a removable attachment device the support of which is disposed on said elements. Each element is formed of a flexible bag divided into compartments by inner membranes substantially of rectangular shape and secured inside the bag on two opposite longitudinal sides, the small sides of said membranes being free. The removable attachment device is an open ring, a strip-stud assembly, a bolt, clip or a T-shaped hook locked by a quarter turn rotation.

3,572,837

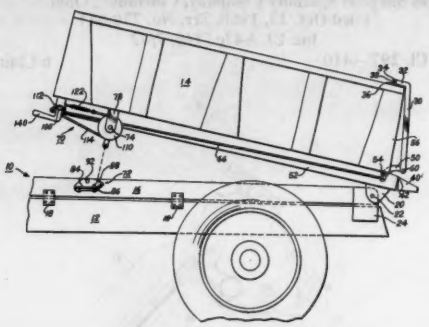
TRUCK TAILGATE OPERATING MECHANISM

Joseph A. Lackey, 2718-D Blake Road, Portage, Ind.

Filed Jan. 14, 1969, Ser. No. 791,001
Int. Cl. B60p 1/26
U.S. Cl. 298—23 8 Claims

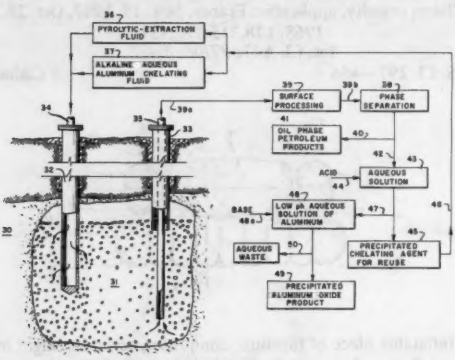
A tailgate operating mechanism for a truck having a dump bed pivoted near the rear end and a tailgate pivoted near the

top of the bed, including a means having a cam section and a cam driven section operable by the raising and lowering of the dump bed. The cam section is normally connected to the



frame of the vehicle and the section operated by the cam is normally mounted on the underside of the bed near the front thereof where it will contact the cam section when the bed approaches its lowered position.

3,572,838
RECOVERY OF ALUMINUM COMPOUNDS AND OIL FROM OIL SHALE FORMATIONS
Charles C. Templeton, Houston, Tex., assignor to Shell Oil Company, New York, N.Y.
Filed July 7, 1969, Ser. No. 839,350
Int. Cl. E21b *43/28*
U.S. Cl. 299—4 **7 Claims**



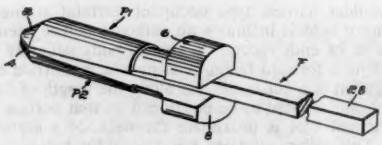
An improved, new and novel method of recovery of oil and aluminum-containing compounds from subterranean oil shale formations, by treating such formations with alternating slugs of a pyrolytically extractive fluid and an aqueous alkaline fluid containing an acid-insoluble chelating agent and recovering oil and aluminum compounds from said extractive fluids.

3,572,839
PROCESS FOR EXCAVATION OF HARD UNDERWATER BEDS
Saburo Okabe, Tokyo, Japan, assignor to Toa Kowan Kogyo Kabushiki Kaisha, Chiyoda-ku, Tokyo, Japan
Filed Aug. 28, 1968, Ser. No. 756,032
Int. Cl. E21c *45/00*
U.S. Cl. 299—17 **2 Claims**

A process for excavating hard underwater beds characterized in that compressed air is ejected around jets of high pressure water so as to blow off existing water from the

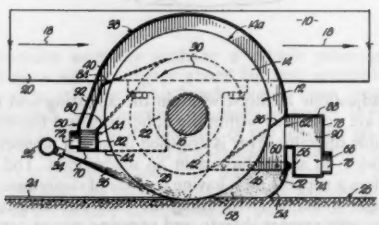
peripheries of said water jets thereby to enhance the excavating efficiency of said hydraulical jets.

3,572,840
MEANS FOR APPLYING WEDGING FORCE TO MINERAL AND OTHER BODIES
Ralph A. Fletcher, Bedford, N.H., assignor to H. E. Fletcher Co., Westford, Mass.
Filed Mar. 21, 1969, Ser. No. 809,282
Int. Cl. E21c *37/04*
U.S. Cl. 299—23 **3 Claims**



A reciprocating wedge device of the plug and feather class consists in a pair of wedge feathers and a wedge plug for use in a drilled hole. The wedge feathers are formed with inner recessed surfaces defined by spaced apart dovetailed edges. The recessed surfaces provide slideways for the wedge plug which has two opposite sides formed in tapered relationship to one another so that when the tapered sides are slidably advanced inwardly along the recessed surfaces, the wedge feathers are driven apart and exert splitting forces within the drilled hole. The two remaining edges of the wedge plug are further formed with dovetailed portions complementary to the dovetailed edges of the wedge feathers to allow the wedge plug to hold the wedge feathers in adjustably interlocked relationship and to draw them together when the wedge feathers and wedge plug are withdrawn from the drilled hole.

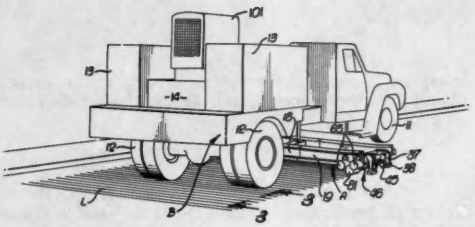
3,572,841
MATERIAL PICKUP FOR GROOVE CUTTERS
Harry W. Rhodes, Belton, Mo., assignor to Norton Company, Worcester, Mass.
Filed Jan. 15, 1969, Ser. No. 791,310
Int. Cl. E01c *23/09*
U.S. Cl. 299—39 **7 Claims**



A groove cutter for payments and the like has a rotatable cutter provided with a bank of cutting discs that are cooled

by streams of water. The particles of material and the water form a slurry. The pickup of the slurry by the discs and the centrifugal force which tends to project the slurry outwardly in a tangent are utilized in the removal of the slurry, leaving the grooved surface essentially free of such slurry.

3,572,842
TRANSVERSE PAVEMENT TEXTURING APPARATUS
Takeshi Mori, Salt Lake City, Utah, assignor to Christensen Diamond Products Company, Salt Lake City, Utah
Filed Jan. 27, 1969, Ser. No. 794,216
Int. Cl. E01c *23/09*
U.S. Cl. 299—39 **32 Claims**

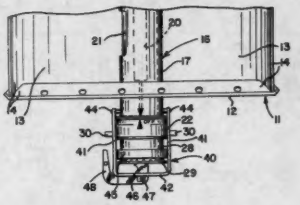


A horizontal frame carried by a hydraulic cylinder and piston mechanism under a vehicle truck chassis. Hydraulic motors rotate a cutter assembly while other hydraulic motors rotate pinions engaging racks fixed to the underside of the frame to propel the cutter assembly transversely across a pavement traffic lane to cut transverse grooves therein of a combined overall width corresponding to the cutter assembly length. The hydraulic mechanism elevates the frame and cutter assembly from the pavement to allow the truck to move along the traffic lane, or lowers the frame and cutter assembly to impose a portion of the truck weight on the cutter assembly. The end portions of the frame are foldable upwardly to reduce the width of the apparatus to within the legal limit for highway travel, and for storage.

3,572,843
CHECK VALVE ARRANGEMENT FOR PREVENTING PIPELINE SLUMPING
Haralambo G. Dimopoulos, Houston, Tex., assignor to Shell Oil Company, New York, N.Y.
Filed May 9, 1969, Ser. No. 823,416
Int. Cl. B65g *53/30*
U.S. Cl. 302—14 **6 Claims**

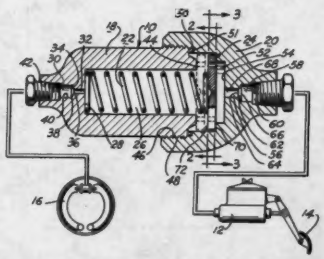
Method and apparatus for preventing downhill slumping in a shutdown slurry pipeline. Automatic check valves are placed along the sloping portions of the pipe to prevent plug formation by the slurry material solid phase upon pipeline shutdown. In the downhill sloping portions the check valves are associated with loops in the pipeline to prevent movement of the slurry solid phase when the only driving force is gravity while permitting normal slurry transport.

3,572,844
PNEUMATIC DISCHARGE ARRANGEMENT FOR HOPPERS
William D. Mundinger, and Arthur F. Calvin, Highland, Ind., assignors to Pullman Incorporated, Chicago, Ill.
Filed Oct. 2, 1968, Ser. No. 764,471
Int. Cl. B65g *53/40*
U.S. Cl. 302—52 **5 Claims**



A hopper includes a pneumatic discharge arrangement having an outer tube extending within the hopper and an inner rotatable tube adapted to discharge materials therefrom, said inner tube having opposite ends projecting from the hopper, and a closure member removably disposed over the opposite ends of said inner tube. A bail-shaped locking member is hingedly connected to each end of the inner tube and in the closed position locks the closure member in place. A stop on the bail limits the positioning of the bail in the closed position and is movable with the bail to an upright out-of-the-way position. The bail in the closed position prevents rotation of the tube and locks the same in a nonoperative position.

3,572,845
HYDRAULIC PRESSURE RATE-OF-CHANGE CONTROL
Donald D. Johannesen, South Bend, Ind., assignor to The Bendix Corporation
Filed Jan. 13, 1969, Ser. No. 792,213
Int. Cl. B60t *8/26, 15/00*
U.S. Cl. 303—6 **6 Claims**

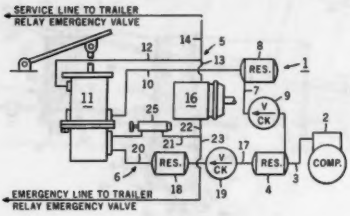


The subject invention relates to a hydraulic pressure rate-of-change control device, which is interposed between a brake assembly and a source of pressurizable hydraulic fluid for actuating the brake assembly, to protect against permanent damage to the brake assembly resulting from a sudden or panic pressurization of said hydraulic fluid.

3,572,846
CONTROL VALVE
Oliver B. Cruse, Florissant, Mo., assignor to Wagner Electric Corporation, Newark, N.J.
Original application Oct. 29, 1968, Ser. No. 771,559. Divided and this application Nov. 25, 1969, Ser. No. 879,858
Int. Cl. B60t *13/38, 13/28*
U.S. Cl. 303—9 **11 Claims**

A control valve having a service member for applying service fluid pressure to the service portion of a spring set brake device to normally effect service energization of a brake con-

nected therewith and an emergency member actuated by said service member in the event of the failure of the service fluid pressure for venting emergency fluid pressure normally applied to the emergency portion of said spring set brake device to the atmosphere to effect mechanical emergency



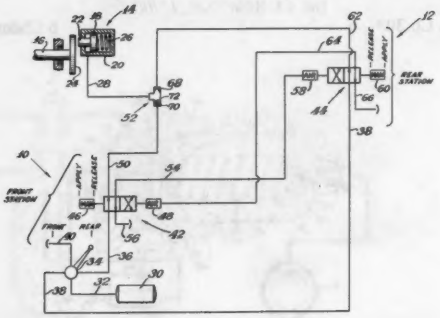
energization of said brake, and a resilient member responsive to emergency fluid pressure less than a predetermined value for automatically isolating the emergency fluid pressure supply and venting the emergency fluid pressure applied to the emergency portion of said spring set brake device to the atmosphere.

3,572,847

DUAL STATION INTERLOCKING PARKING BRAKE

Robert G. Luft, Wildwood, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed Oct. 27, 1969, Ser. No. 869,716
Int. Cl. B60t *13/38, 17/18*
U.S. Cl. 303—13 **7 Claims**



A brake control for a vehicle with a source of fluid pressure having a pair of actuator valves for directing fluid pressure from the source to the brake to effect its release and a selector valve for selectively directing fluid pressure from the source to one of said actuator means while isolating the other actuator means from said source.

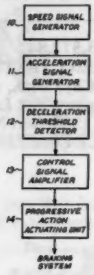
3,572,848

ANTI-SKID DEVICE FOR A VEHICLE BRAKING SYSTEM

Guy Marouby, Neuilly, France, assignor to Societe Anonyme D. B. A., Paris, France

Filed May 15, 1968, Ser. No. 729,325
Claims priority, application France, June 22, 1967, 111,452
Int. Cl. B60t *8/08*
U.S. Cl. 303—21 **3 Claims**

An antiskid device for a vehicle braking system utilizing an electronic sensing unit for sensing the vehicle wheel speed and elaborating therefrom a control signal which is applied to an actuating unit responding thereto by decreasing or cancelling the pressure in the vehicle braking system so as to prevent the wheel to lock up and the resulting skidding of the vehicle.

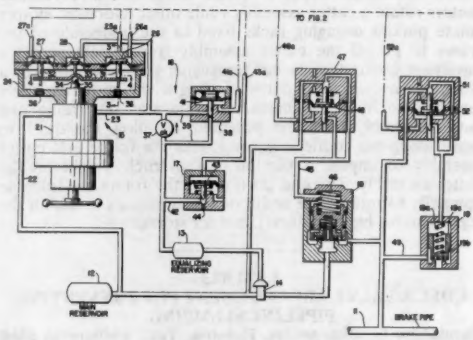


3,572,849

BRAKE PIPE PRESSURE CONTROL SYSTEM

Thomas H. Engle, Cape Vincent, N.Y., assignor to General Signal Corporation

Filed Aug. 4, 1969, Ser. No. 847,054
Int. Cl. B60t *13/62*
U.S. Cl. 303—25 **11 Claims**



Apparatus for controlling the pressure in the brake pipe of an air brake system. The apparatus includes, as operative elements, a brake pipe pressure reduction controller, equalizing reservoir charging and discharge valves, and brake pipe cutout and vent valves, and the components are adapted to be controlled by low power digital or on-off signals. The control signals are furnished by a control mechanism, such as a fluidic logic circuit, which may include one or more controlling stations located either locally or remotely and operated either automatically or manually.

3,572,850

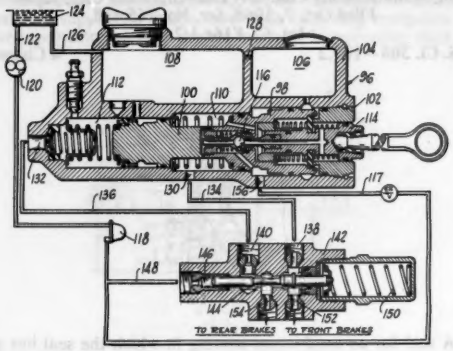
PRESSURE RESPONSIVE SPLITTER VALVE

Harold B. Schultz, South Bend, Ind., assignor to The Bendix Corporation

Filed July 24, 1968, Ser. No. 747,256
Int. Cl. F16k *11/04, 11/06*
U.S. Cl. 303—84 **7 Claims**

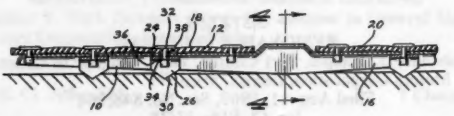
A control device in a braking system for scheduling hydraulic pressures from separate sources to front and rear wheel brakes with equal intensity. A housing with separate inlet and outlet ports for each system has a resiliently biased valve member which extends into a control chamber. The control chamber is connected to one of the sources of hydraulic pressure. When the pressure in the control

chamber reaches a predetermined value the resilient member collapses allowing the valve to move. The valve upon moving closes the communication of one inlet port and opens the



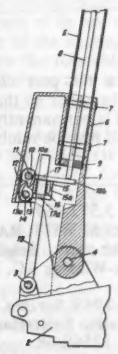
discharge ports to the other source of hydraulic pressure assuring the same line pressure in the different wheel brake systems.

3,572,851
SNOWMOBILE TRACK CLEAT STUD
Paul W. Schuler, 2201 Payne Ave., St. Paul, Minn.
Filed Jan. 27, 1969, Ser. No. 794,271
Int. Cl. B62d *55/24*
U.S. Cl. 305—35 **6 Claims**



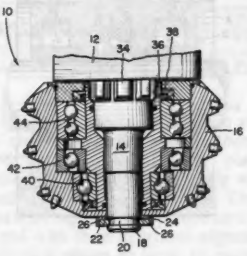
A studded cleat for snowmobile endless driving track including a channel having parallelly disposed spaced sidewalls connected to a bottom, a stud having parallelly disposed side portions connected to a bottom at the edges thereof, the side portions being tapered at the outer ends thereof with the stud secured within the sidewalls of the channel.

3,572,852
HANDLE-SWIVEL ARRANGEMENT
Leon Seilaz, Koppigen, Switzerland, assignor to J. & L. Seilaz A.G., Koppigen, Switzerland
Filed Aug. 22, 1969, Ser. No. 852,365
Int. Cl. B25g *3/38*
U.S. Cl. 306—4 **6 Claims**



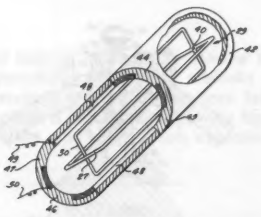
Two pivotally mounted clamping levers, biased apart by a spring, clamp on a pivotal rod that remains parallel to the pipe handle. The clamping holds the pipe handle in any desired angular position.

3,572,853
ROCK BIT MOUNTING ASSEMBLY
William D. Coski, Mercer Island, Wash., assignor to Lawrence Manufacturing Company, Seattle, Wash.
Filed Mar. 12, 1969, Ser. No. 806,570
Int. Cl. F16c *19/14*
U.S. Cl. 308—8.2 **8 Claims**



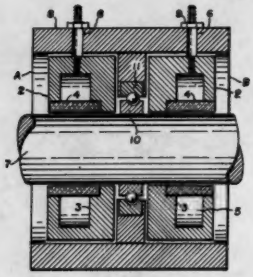
A mounting assembly in which a rock bit is retained on a member, together with others thereof, by a two-piece locking plate and in which easy removal of the plate demounts the bit. The bit is rotatable on a shaft, and the shaft has a splined section which interlocks with a splined section of the hub of the bit. This splining prevents the hub from rotation on the shaft in the event the bearings freeze up.

3,572,854
ELECTROMAGNETIC SUSPENSION AND POSITIONING DEVICE WITH INHERENT DYNAMICAL STABILITY IN THREE DIMENSIONS
Gordon T. Danby, Box 12, Wading River, N.Y.
Filed Jan. 5, 1968, Ser. No. 696,069
Int. Cl. F16c *39/06*
U.S. Cl. 308—10 **16 Claims**



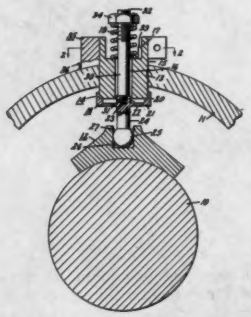
Machine bearings and positioning devices are disclosed which utilize electromagnetic induction between a quadrupole component of magnetic field and a pair of orthogonally arranged closed inductor loops. A quadrupole magnet (a magnet which generates a quadrupole component of magnetic field) is rigidly mounted either upon the movable (or rotor) member or upon the stator member of the device. The closed loops are rigidly mounted upon the other member. The quadrupole magnet is composed of permanent magnets or of ferroelectromagnets, or is an air-cored electromagnet structure. Either or both the magnet and the closed loops can be superconductors. Axial stability is provided either by locating the closed loops partially within and partially without the quadrupole component of magnetic field or by utilizing auxiliary electromagnetic thrust sensitive devices at one or both ends of the shaft of the device.

3,572,855
FLUID SEALS
Richard H. Weichsel, Hudson, Ohio, assignor to Apex Bearing Company
Filed Oct. 28, 1968, Ser. No. 771,201
Int. Cl. F16c *33/78*
U.S. Cl. 308—36.1 7 Claims



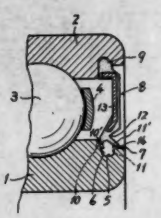
A fluid seal including a housing having a substantially circular outer wall and first and second spaced inwardly extending circular sidewalls, one of which is longer than the other and has a circular offset end portion to receive one end portion of a porous collar, the opposite end portion of the collar being secured to the inner periphery of the other sidewall to provide a circular channel, and means for passing a fluid through the channel and porous collar.

3,572,856
APPARATUS FOR PRODUCING SMALL DISPLACEMENTS
James D. McHugh, San Jose, Calif., assignor to General Electric Company
Filed Sept. 27, 1968, Ser. No. 763,210
Int. Cl. F16c *17/06*
U.S. Cl. 308—73 8 Claims



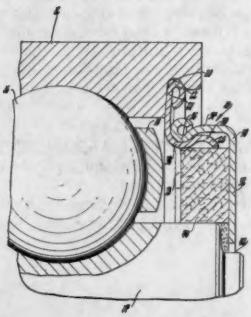
A pair of coaxially aligned resilient members or spring members of large and small spring gradients are secured in opposed relationship with respect to a point of reference. A centrally disposed rod is fixedly secured to the remote end of the spring member of higher spring gradient and is adjustably connected to the remote end of the spring member of smaller spring gradient. A relatively large displacement of the remote end of the spring member of small spring gradient in relation to the fixed reference point causes a relatively small displacement in the spring member of larger spring gradient.

3,572,857
ANTIFRICTION BEARING SEAL
Hisao Hasegawa, Nagoya, Japan, assignor to The Toyo Bearing Manufacturing Company Limited, Osaka City, Japan
Filed Oct. 7, 1968, Ser. No. 765,458
Int. Cl. F16c *1/24*
U.S. Cl. 308—187.2 4 Claims



A seal for an antifriction bearing in which the seal has at least two sealing lips on the sealing edge thereof, the other edge being carried by a bearing race, the first such lip abutting a bearing race and providing a positive closure for the bearing grease chamber, and the second such lip defining a labyrinth closure preventing egress of dirt, dust, etc. when the first lip is in operative abutment for positive sealing, the seal being fixed during operative abutment of the first lip with a bearing race and, when flexure is relaxed by wear of the first lip, the second lip moves to a position of abutment with the bearing race, providing a secondary positive closure for the grease chamber.

3,572,858
REMOVABLE FELT SEAL
Salvatore J. Pompei, Port Clinton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Aug. 11, 1969, Ser. No. 848,964
Int. Cl. F16c *33/78*
U.S. Cl. 308—187.2 5 Claims

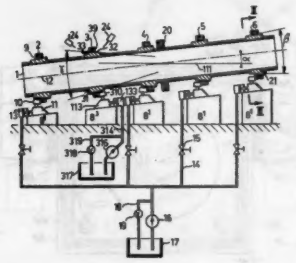


A felt-type seal has a two-part casing with one part removably mounted on the other so that the felt element is replaceable when the seal is permanently mounted on a bearing race. The bearing itself may be relubricated when the felt element is replaced.

3,572,859
ROTATING DRUM WITH RACE RINGS
Hans Sommer, Obourg-lez-mons, Belgium, assignor to Cementfabrik Holderbank-Wildegg AG, Holderbank, Switzerland
Filed Aug. 7, 1969, Ser. No. 848,318
Claims priority, application Switzerland, Aug. 28, 1968, 12568/68
Int. Cl. F16c *19/00*
U.S. Cl. 308—203 6 Claims

A rotating drum with race rings radially supported by bearing rollers and axially supported by supporting rollers, the

latter bearing the axial thrusts to which the race rings are subjected due to inclination of the drum and/or mechanical means acting on the drum in axial direction. In the axial region of each race ring an axial portion of the drum has an external conical surface tapering in the direction of the associated supporting roller, and each race ring comprises a corresponding internal conical surface. In operating such a



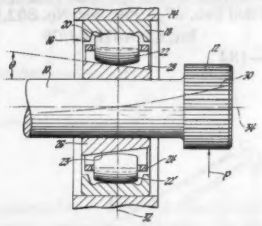
drum with an inclined axis, the majority of the race rings abutting with their downwardly facing end faces on supporting rollers and at least one race ring abutting with its upwardly facing end face on its associated supporting roller, said supporting roller situated at the supper side of its associated race ring being pressed against the latter only at the time of starting and/or in cold state of the drum.

3,572,860

MODIFIED CYLINDRICAL ROLLER BEARING

Robert F. Hart, Downers Grove, Ill., assignor to General Motors Corporation, Detroit, Mich.

Filed June 19, 1969, Ser. No. 834,703
Int. Cl. F16c *13/00*
U.S. Cl. 308—213 **7 Claims**



A roller bearing comprising crowned cylindrical rollers in combination with a cylindrical outer race and an inner race is disclosed. In a second configuration, the cross section of the inner race is in the form of an arc with the high point offset from the center plane of the bearing. Both bearings improve life in situations where the rotatably supported member imposes a misalignment between the bearing races.

3,572,861

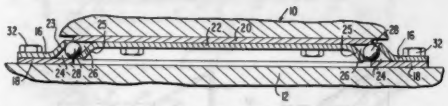
SWIVEL AND METHOD OF MAKING SAME

Walter Clark Rogers, Jr., 3417 Greenhill Dr., High Point, and Morton Snitzer, 3217 Ridge Crest Dr., Rocky Mount, N.C.

Filed Jan. 15, 1969, Ser. No. 791,474
Int. Cl. F16c *14/10*
U.S. Cl. 308—227 **3 Claims**

A swivel comprising a first pair of plates fixed together in overlying relationship and having an aperture with the edges of one of the plates defining the aperture deformed outwardly to provide an outer race; a second pair of plates fixed together in overlying relationship and received in the aperture of said first pair of plates with the peripheral edges of one of said second pair of plates being deformed outwardly to provide an inner race; and ball bearing members received in said races. In applying the swivel to a swivel chair, one pair of plates is secured to a seat member while the other pair of plates is secured to a base member such that the seat member may rotate about a vertical axis relative to the base and with the weight of the seat member being transmitted to the base solely through the swivel.

One method of forming the swivel includes cutting out a pair of identical circular portions from two plates, preferably when in overlying relationship, to provide a first pair of plates having similar circular apertures and a second pair of



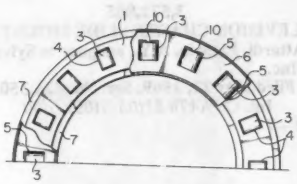
circular plates dimensioned to be received in said apertures. The cut edges of one plate in each pair are then deformed to define inner and outer races when the plates are subsequently assembled in overlying relationship with the circular plates received in the first pair of plates. The first pair of plates are then welded together and placed on a jig in overlying relationship and with their apertures aligned and receiving one of the circular plates to form an open trough into which ball bearings are then placed. The other circular plate is then welded to the associated circular plate to close the trough and complete the assembly.

3,572,862

THRUST ROLLER BEARING

Hiroshi Teramachi, Tokyo, Japan, assignor to Nippon Thompson Co. Ltd., Tokyo, Japan

Filed Oct. 16, 1969, Ser. No. 866,971
Int. Cl. F16c *33/38*
U.S. Cl. 308—235 **1 Claim**



A thrust roller bearing in which an annular flat plate is used as an intermediate guide plate whereby rollers are guided always precisely and the contact area between each roller and guide plates is minimized to provide highly smooth rotation of the rollers, and which is less expensive to manufacture.

3,572,863

ASBESTOS-BASE WEAR RING

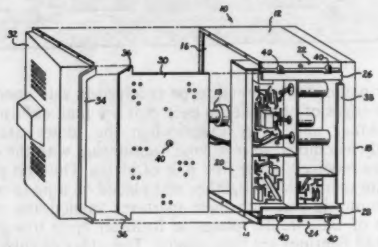
Walter S. Josephson, Skippack, Pa., assignor to Greene Tweed & Co. Inc.

Filed Dec. 26, 1967, Ser. No. 693,195
Int. Cl. B32b *19/02*; **F16c** *9/00, 33/20*
U.S. Cl. 308—238 **5 Claims**

A bearing formed of asbestos fibers, phenol-formaldehyde resin, nitrile rubber and lubricant. Such bearing is made by

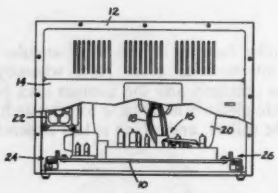
forming a preform of the components, and then molding the preform to the desired shape.

3,572,864
TELEVISION CABINET PROVIDING FULL ACCESS TO CHASSIS UNDERSIDE
William L. Arrington, Batavia, and Patrick J. Micari, Fairport, N.Y., assignors to Sylvania Electric Products, Inc.
Filed May 21, 1969, Ser. No. 826,349
Int. Cl. A47b *81/06*; H05k *5/00*
U.S. Cl. 312—7 **5 Claims**



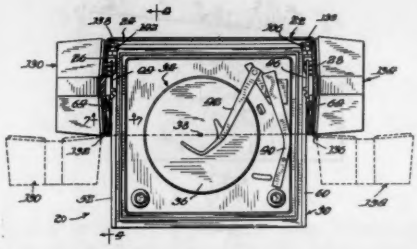
A television receiver construction wherein an enclosure includes a pair of side panels and a chassis is attached to the side panels to provide the major bottom structural support for the side panels. Access to the chassis underside is effected by a separable bottom cover slidably engageable by guide supports affixed to the side panels and held captive by a cabinet back cover.

3,572,865
TELEVISION CHASSIS SLIDE MOUNTING
Alfonso S. Attardi, Batavia, N.Y., assignor to Sylvania Electric Products Inc.
Filed May 21, 1969, Ser. No. 826,350
Int. Cl. A47b *81/06*; H05k *5/00*
U.S. Cl. 312—7 **7 Claims**



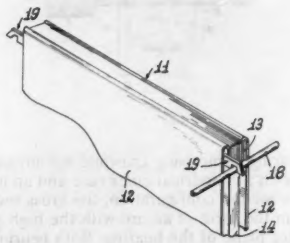
A slide mounting for supporting a television chassis in a cabinet and enabling partial withdrawal or complete removal of the chassis for servicing. The mounting comprises a pair of outer members affixed to the cabinet and a pair of inner members attached to opposite ends of the chassis and each having a tongue portion slidably engaging a groove in the corresponding outer member. A spring latch flexibly mounted on each outer member locks the chassis in a normal operating position by engaging a first notch in the corresponding inner member tongue portion. For servicing, the spring latches are manually deflected to disengage the first set of tongue notches, and the chassis is withdrawn until locked in a service position by the spring latches engaging a second set of tongue notches. Complete removal of the chassis is facilitated by deflecting the latch springs sufficiently to engage step portions in the outer members.

3,572,866
PORTABLE PHONOGRAPH RECORD PLAYER
Gerald L. Wolanin, Baroda, Mich., assignor to V-M Corporation, Benton Harbor, Mich.
Filed Feb. 25, 1969, Ser. No. 802,043
Int. Cl. A47b *81/06*
U.S. Cl. 312—8 **10 Claims**



A phonograph record player of the type having a generally upright carrying case or housing, having a backwall, front wall and spaced sidewalls, and a turntable tray or base positioned in an enlarged opening in, and forming a closure portion of, the front wall of the carrying case or housing. A double pivot arrangement is used to support the turntable base between the sidewalls of the housing for movement between a stable generally upright storing position and a stable generally horizontal record playing position.

3,572,867
HANGER HOOK ASSEMBLY FOR SUSPENSION FILE FOLDERS
Edward W. Cooper, Scarborough, Ontario, Canada, assignor to Gary Industries, Inc., d/b/a Acco Products
Filed Feb. 27, 1969, Ser. No. 802,986
Int. Cl. A47b *63/00*
U.S. Cl. 312—184 **10 Claims**

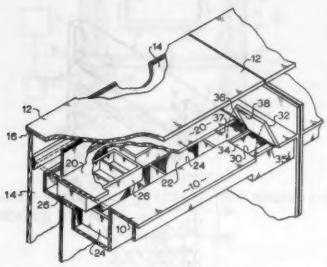


The invention is concerned with suspension file folders having suspension hooks on its edges which may be slidably retracted into an ineffective position or readily removed therefrom.

3,572,868
BANK TELLER'S WORKTABLE
Francis E. Legge, Don Mills, Ontario, Canada, assignor to The Bank of Nova Scotia, Toronto, Ontario, Canada
Filed Aug. 25, 1969, Ser. No. 852,764
Int. Cl. A47b *17/00*
U.S. Cl. 312—194 **5 Claims**

A teller's desk having a table with subsurface repository served by an opening in the table and a closure slidable in the plane of the table between respository covering and uncover-

ing positions; said opening and repository being overhung by a relatively wide counter paralleling and spaced above the table; the disposition of the repository in the table and the



spacing and width of the counter cooperating with each other to shield the repository opening and contents from the view and reach of persons at the front of the desk.

3,572,869

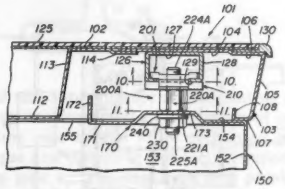
MOUNTING ASSEMBLY

Robert A. Studinski, and Florian A. Walter, Aurora, Ill., assignors to Lyon Metal Products Incorporated, Aurora, Ill.

Original application Jan. 12, 1968, Ser. No. 697,490, now Patent No. 3,521,935, dated July 28, 1970. Divided and this application Sept. 29, 1969, Ser. No. 871,039

Int. Cl. A47b *17/00, 19/00, 27/00*

U.S. Cl. 312—194 **4 Claims**



The mounting assembly is used for attaching a member to a mounting channel including inwardly directed retaining flanges disposed on the lower edges of a pair of downwardly extending sidewalls. The assembly comprises a threaded nut positioned on the upper surfaces of the retaining flanges, the distance between a pair of longer sides of the nut being less than the distance between the retaining flanges to permit insertion of the nut in the channel, a washer positioned against the lower surfaces of the retaining flanges, the nut and the washer each having abutment surfaces spaced apart a distance slightly less than the distance between the retaining flanges to limit rotation of the nut and the washer, a fastener including a spacer portion and a threaded shank extending therefrom and through the washer and engaging the nut, and an attachment device engaging the fastener for holding the member against the spacer portion.

3,572,870

EXTENSIBLE AND RETRACTABLE HANDLE ASSEMBLY WITH LATCHING MEANS THEREFOR

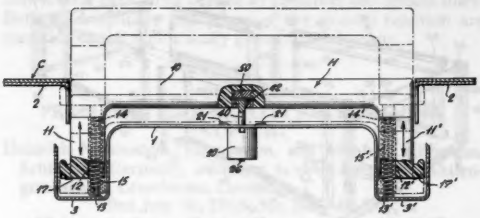
Lou F. Marks, and Bela G. Szabo, Pittsburgh, Pa., assignors to Bruce Plactics, Inc., Moon Run, Pa.

Filed June 3, 1969, Ser. No. 830,053

Int. Cl. A47b *95/02;* **A47j** *45/00;* **A45c** *13/76*

U.S. Cl. 312—244 **11 Claims**

An extensible and retractable handle assembly for portable cases, and the like, which is spring biased to its extended operative position and which is moved to its inoperative position by an inward movement of the handle, in which position the same is retained by a latching assembly comprising a rotary member, which member is adapted to be rotated by the



reciprocating movements of the handle. An inward movement of the handle for a slight extent in the same direction as the previous movement affects the rotary member and the latching device to effect the release of the handle, which is extended by the spring biasing means acting thereon.

3,572,871

ASHTRAY

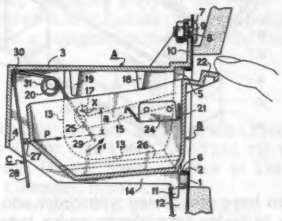
Michel Bonnaud, Montbeliard, France, assignor to Automobiles Peugeot, Paris and Regie National Des Usines Renault, Billancourt, France

Filed Nov. 14, 1968, Ser. No. 775,661

Claims priority, application France, Dec. 6, 1967, 131,117

Int. Cl. A47b *67/02;* **A47f** *5/08*

U.S. Cl. 312—248 **9 Claims**



"Ashtray structure for a vehicle comprising a drawer pivotably mounted at its rear end in a housing carried by the wall with which the ashtray structure is combined. The wall and housing have coincident apertures. The drawer pivots between a stable inoperative position and a stable position of use in which position it is downwardly and forwardly inclined and presents its interior in front of said apertures."

3,572,872

TANDEM TABLE FRAME ASSEMBLY

Jay G. Fenwick, Albert Lea, Minn., assignor to Streater Industries, Inc., Albert Lea, Minn.

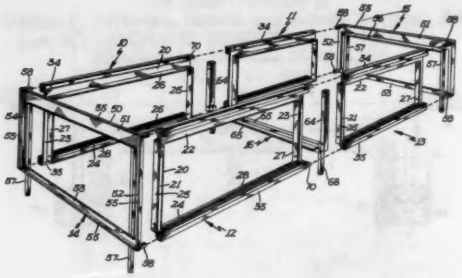
Filed Sept. 29, 1969, Ser. No. 861,665

Int. Cl. A47b *47/00*

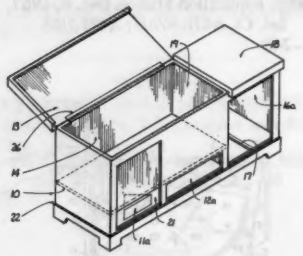
U.S. Cl. 312—263 **5 Claims**

A frame assembly for a display table of the type commonly used in department stores for the display and storing of software goods. The frame assembly has three types of frame sections which are a side frame section, an end frame section and an intermediate frame section. Any even number of side frame sections may be used to provide a tandem assembly of

any desired length. The side frames have upper and lower door tracks for sliding doors which tracks are continuous for the entire length of a tandem unit. The side frames have upper and lower tubular members which are also continuous for the entire length of a tandem unit and facilitate the assembly of a unit.



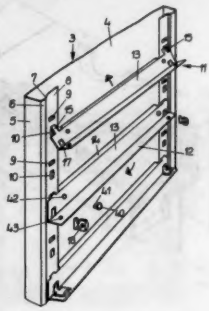
3,572,873
STEREO HOPE CHEST
Harry W. Harting, Jr., 276 N. 8th St., Lander, Wyo.
Filed May 29, 1968, Ser. No. 740,391
Int. Cl. A47b *81/06*
U.S. Cl. 312—290 **3 Claims**



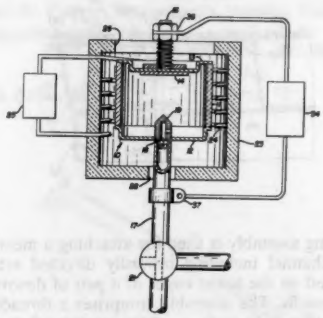
A stereo hope chest lined with cedar and having a record player or cartridge tape player, and a tuner. The chest includes two sidewalls, a backwall, a front wall and an extreme bottom portion with a false bottom defining a space between the chest interior and the extreme bottom. A recessed opening is provided in the front wall adjacent to a sidewall, and a speaker for the stereo unit is provided in the space between the false bottom and the extreme bottom adjacent to the recessed opening, which speaker is covered by a decorative grill. The space between the false bottom in the chest interior and the extreme bottom portion also provides an opening into which a storage drawer is installed. A partition separates the chest interior partitions and a cover for creating a covered cavity serving as a storage space. The lid of the chest is attached to the backwall by means of a hinge.

3,572,874
METAL CABINETS
Ernst Hassel, Neunkirchen, Salchendorf, Germany, assignor to Fritz Schafer GmbH„ Neukirchen, Germany
Filed Oct. 20, 1969, Ser. No. 867,826
Claims priority, application Germany, Oct. 23, 1969, G6,803,906
Int. Cl. A47b *88/00*
U.S. Cl. 312—350 **7 Claims**

A sheet-metal cabinet having drawers slidable on rails fitted in the cabinet body, each rail having horizontal and vertical flanges wherein at the extremities of the vertical flanges are arranged lugs which engage in horizontal slots in the cabinet body and beneath the lugs there are perforations in the vertical flanges which correspond to perforations in the cabinet body and are traversed by locking elements resting on the upper side of the horizontal flanges so that the upper side of the locking elements provides a sliding surface for the underside of the drawers.



3,572,875
VACUUM TUBE
Lowell A. Noble, Hillsborough, Calif., assignor to Varian Associates
Filed July 28, 1960, Ser. No. 46,025
Int. Cl. H01j *9/38;* **G21g** *3/04*
U.S. Cl. 316—13 **3 Claims**

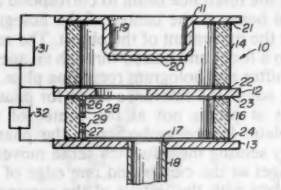


2. A process for making a pulsed-neutron tube containing an active metal having sorbed therein a gas chosen from the group consisting of deuterium and tritium, said process comprising the steps in sequence of heating said tube to an elevated temperature while maintaining a vacuum therein, introducing said gas into said tube, cooling said active metal, below said elevated temperature while forming an electrical discharge in said gas, and sealing said tube permanently closed.

3,572,876
METHOD OF MAKING A NEUTRON SOURCE TUBE
Lowell A. Noble, Hillsborough, Calif., assignor to Varian Associates
Original application Aug. 9, 1960, Ser. No. 48504. Divided and this application Oct. 6, 1964, Ser. No. 402,022
Int. Cl. H01j *9/38*
U.S. Cl. 316—20 **3 Claims**

A method of making a neutron source tube having active metal areas spaced apart on the envelope thereof, in which

such active metal areas are heated or cooled in order to cause them to respectively sorb or not sorb an isotope of



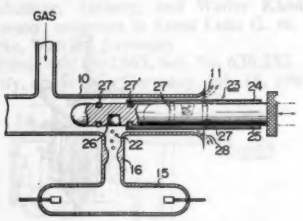
hydrogen during processing of the neutron source tube prior to the final sealing thereof.

3,572,877

APPARATUS FOR MANUFACTURING DISCHARGE TUBES

Kazuyuki Ogawa, Yokohama-shi, and Satoshi Nagano, Kawasaki-shi, Japan, assignors to Tokyo Shibura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Mar. 10, 1969, Ser. No. 805,412
Claims priority, application Japan, Mar. 12, 1968, Aug. 23, 1968, 43/15580;43/59833
Int. Cl. H01j *7/20*
U.S. Cl. 316—30 **7 Claims**



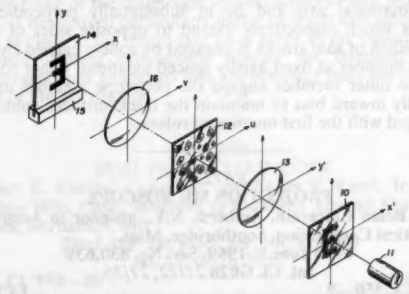
In a method and apparatus for manufacturing a discharge tube wherein an envelope of the discharge tube is connected to an evacuating pipe system to be evacuated and charged with an inert gas and operating substances required through the evacuating pipe system, said system is provided with a closable opening and while the inert gas is being discharged through the opening a capsule carrying the operating substance is inserted into the pipe system through said opening to charge the operating substance into the envelope.

3,572,878

COMPLEX SPATIAL FILTER SYNTHESIS

Sun Lu, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sept. 11, 1967, Ser. No. 666,584
Int. Cl. G02b *27/22*
U.S. Cl. 350—3.5 **6 Claims**



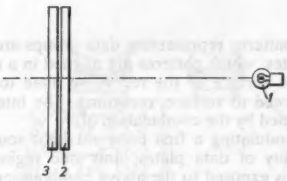
An optical filter in the form of a synthetic hologram of an aggregation of point sources recorded on a photographic plate using a standard two-beam holographic system. The required filter function of the optical filter is established and generalized into a periodic function which is then synthesized by a finite number of harmonics in a spatial frequency domain. Where the filter function has a degree of symmetry, the synthesis process is comparatively simple with only the first several harmonics needed to construct the optical filter. Both the amplitude and phase of the desired function are recorded on the synthetically generated hologram.

3,572,879

PRODUCING HIGH QUALITY HOLOGRAMS BY COPYING

Heinrich Nassenstein, Leverkusen, and Manfred Kliemann, Schildgen, Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed July 30, 1968, Ser. No. 748,635
Claims priority, application Germany, Aug. 18, 1967, A56531
Int. Cl. G02b *27/00*
U.S. Cl. 350—3.5 **3 Claims**



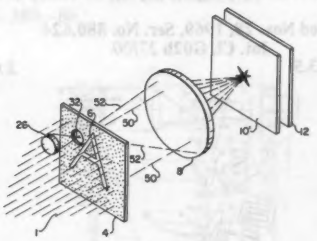
The production of a hologram free from undesirable line structures by forming a phase hologram by bleaching an absorption hologram and then copying the phase hologram using a gas discharge tube to radiate the phase hologram with and thus produce a hologram completely free from coarse residual fringes.

3,572,880

METHOD OF ELIMINATING A PERTURBATION WHEN FORMING A HOLAGRAPHIC SPATIAL FILTER

Thomas J. Negrelli, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed Dec. 31, 1968, Ser. No. 788,152
Int. Cl. G01b *27/00, 27/38*
U.S. Cl. 350—3.5 **4 Claims**

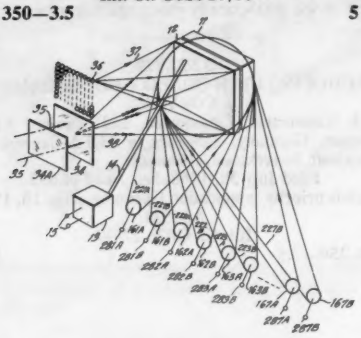


The present invention relates to a method of eliminating perturbation between a reference beam and a source beam during the formation of a hologram. A Fraunhofer diffraction pattern of the subject of the hologram is placed in front of a recording medium in which a hologram of the subject is to be formed. Perturbation between the reference beam and the source beam is thus eliminated. A hologram, such as is used in a character recognition system, may be improved by the method of the present invention.

3,572,881
LARGE-CAPACITY ASSOCIATIVE MEMORY EMPLOYING HOLOGRAPHY

Nobuo Nishida, and Mitsuhito Sakaguchi, Tokyo-to, Japan, assignors to Nippon Electric Company Limited, Tokyo-to, Japan

Filed July 28, 1969, Ser. No. 845,243
Claims priority, application Japan, Aug. 16, 1968, 43/58819
Int. Cl. G02b 27/00
U.S. Cl. 350—3.5 5 Claims



Interference patterns representing data groups are formed in recording plates, which patterns are aligned in a direction transverse to the surface of the recording plate to provide volume, as opposed to surface, recording. The interference patterns are formed by the combination of:

1. spatially modulating a first coherent light source with one of a plurality of data plates; only one region of the recording plate is exposed to the above combination of light rays for each data plate;

2. parallel coherent beams spatially modulated in accordance with a binary code and its complement, said code being unique to each data plate;

3. a third coherent light source whose angle of incidence on the recording plate varies for each data plate.

Retrieval is performed by:

1. spatially modulating the data parallel light beams with the complement of at least selected bits of the binary code;

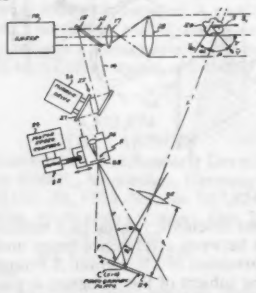
2. observing, behind the recording plate, those regions which do not pass a light ray; and

3. exposing the recording plate to the parallel light rays in sequential fashion only those regions which do not pass light rays so as to view the data groups having binary code positions common to the retrieval data applied, in complementary form, to modulate the parallel coherent light rays.

3,572,882
VARIABLE REFERENCE PHASE HOLOCAMERA TO COMPENSATE FOR OBJECT MOTION

Don B. Neumann, Ann Arbor, Mich., assignor to the United States of America as represented by the Secretary of the Air Force

Filed Nov. 28, 1969, Ser. No. 880,624
Int. Cl. G02b 27/00
U.S. Cl. 350—3.5 2 Claims

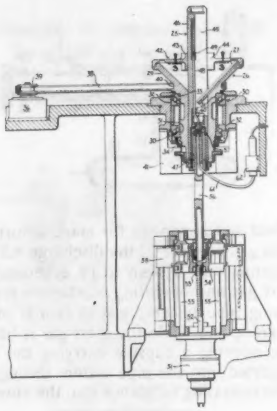


A variable reference phased holographic system for recording holograms of objects having some movement with respect to the photographic plate which has the conventional signal beam and reference beam provided by a beam splitter having a phase shifter in the reference beam path to adjust the phase of the reference beam to correspond to phase shifts in the signal beam at the center of the hologram recording plate due to the movement of the object. The reference beam is brought to a focus and passed through an aperture between the phase shifter and hologram recording plate. The aperture is moved to adjust the reference beam for phase shifts in the signal beam at points not at the center of the hologram recording plate. In one embodiment the phase corrections are made by sensing means which sense movement of interference fringes at the center and one edge of the hologram recording plate with the output of the sensing means being applied to phase shifters in the reference beam.

3,572,883
STRUCTURE FOR CONE AND PERISCOPE OF SPIRAL PATH SCANNING MECHANISM

Sten Nordlund; Bengt Wetterbrandt, and Lars-Johan Persson, Jonkoping, Sweden, assignors to Saab Aktiebolag, Linkoping, Sweden

Filed Aug. 27, 1969, Ser. No. 853,244
Claims priority, application Sweden, Aug. 28, 1968, Aug. 29, 1968, 11,530;11,531
Int. Cl. G02b 17/00
U.S. Cl. 350—6 9 Claims



A scanner for bubble chamber photographs comprises a rotatable mirror-carrying outer member and an inner periscope member that rotates with and moves lengthwise relative to the outer member. The periscope member has accurately straight track surfaces along its length that parallel the rotational axis and lie in substantially perpendicular planes which respectively extend to opposite sides of said axis. Each of said tracks is engaged by rollers carried by the outer member at fixed axially spaced locations. Other rollers on the outer member engage the periscope member under radially inward bias to maintain the track surfaces guidingly engaged with the first mentioned rollers.

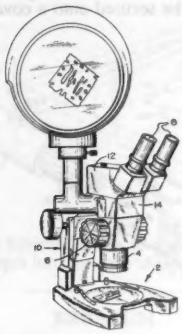
3,572,884
PROJECTION MICROSCOPE

John Balan Chirayath, Amherst, N.Y., assignor to American Optical Corporation, Southbridge, Mass.

Filed June 5, 1969, Ser. No. 830,639
Int. Cl. G02b 21/22, 21/36
U.S. Cl. 350—9 1 Claim

A stereoscopic microscope having an illuminator disposed in one optical path and a projection lens and screen in the

other. The illuminator provides light through one optical path to the object plane, from which it reflects along the



other optical path. The projection lens projects a greatly magnified image onto the screen for viewing without conventional eyepieces.

3,572,885

POLARIZING MICROSCOPE HAVING BERTRAND LENS

Gunter Reinheimer, Amberg, and Walter Klein, Auf der Hohl, Germany, assignors to Ernst Leitz G. m. b. H., Optische Werke, Wetzlar, Germany

Filed May 15, 1967, Ser. No. 638,282
Claims priority, application Germany, July 16, 1966, L54089
Int. Cl. G02b *27/28*
U.S. Cl. 350—14 **3 Claims**

In a polarizing microscope having conoscopic and orthoscopic viewing modes a Bertrand lens for conoscopic observation is employed. A diaphragm is arranged close to said Bertrand lens, and in addition to the Bertrand lens a further lens is insertable in the path of the light rays. The focal length of this lens is calculated as to produce — in combination with the microscope objective — an image of the object in the plane of the diaphragm located adjacent said Bertrand lens. It has proven particularly useful to insert said additional lens as close to the image-side focal plane of the objective as possible. During orthoscopic viewing the Bertrand lens, diaphragm, and additional lens are removed from the optical path of the microscope.

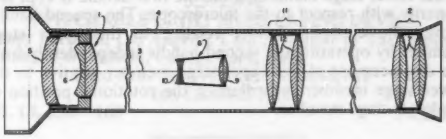
3,572,886

DUAL POWER TELESCOPE

Robert E. Curtiss, Cupertino, and Frank F. Rand, Jr., Los Altos Hills, Calif., assignors to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Apr. 28, 1969, Ser. No. 819,794
Int. Cl. G02b *23/00*
U.S. Cl. 350—20 **1 Claim**

A dual-power telescope is disclosed comprising objective means, an eyepiece, and a Galilean telescope adapted to be interposed therebetween with the Galilean ocular positioned between the objective means and its focal plane and the



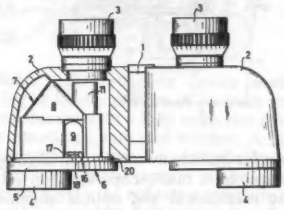
Galilean objective positioned between the eyepiece and the focal plane of the objective means.

3,572,887

OPTICAL INSTRUMENT FOR VIEWING DISTANT OBJECTS

Horst Leitzsch, Neuenreuth near Creussen, Germany, assignor to Steiner-Optik Karl Steiner, Postfach, Bayreuth, Germany

Filed Feb. 25, 1969, Ser. No. 802,183
Int. Cl. G02b *23/02*
U.S. Cl. 350—51 **4 Claims**



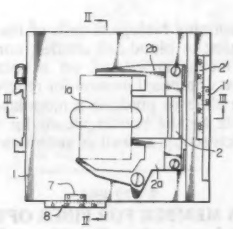
In an optical instrument for viewing distant objects, and in particular in a binocular, the eyepiece is mounted directly in the casing of the instrument and the prism system and the objective are mounted on a common carrier which is inserted into the casing and retained therein in the correct optical position by locating means on the carrier and in the casing.

3,572,888

ROTARY AND TRANSVERSELY ADJUSTABLE MICROSCOPE STAGE

Takashi Kawashima, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

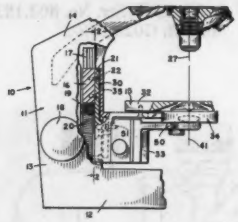
Filed Sept. 3, 1969, Ser. No. 854,833
Claims priority, application Japan, Sept. 10, 1968, Sept. 10, 1968, 43/64674;43/64675
Int. Cl. G02b *21/26*
U.S. Cl. 350—86 **5 Claims**



Cross-moving stage of a microscope comprising a lower stage member supported by a support member of the microscope rotatably about the optical axis of the microscope, an upper stage member slidably supported on the lower stage member, and a clamping holder for a slide

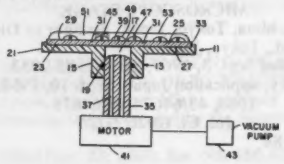
glass slidably supported on the upper stage member by a slide member guided in the upper stage member. The support member mounts thereon rotatably a first handle and a second handle coaxially with the first handle. The first handle moves the upper stage member regardless of the rotational position of the lower stage member while the first handle is kept stationarily with respect to the microscope. The second handle moves the clamping holder relative to the upper stage member by operating the second handle independently from the displacement of the upper stage member relative to the lower stage member regardless of the rotational position of the lower stage member.

3,572,889
MOUNTING AND ALIGNMENT MECHANISM FOR MICROSCOPE STAGE
Kenneth G. Bloomfield, Rochester, N.Y., assignor to Bausch & Lomb, Incorporated, Rochester, N.Y.
Filed Apr. 21, 1969, Ser. No. 817,725
Int. Cl. G02b *21/26*
U.S. Cl. 350—87 **8 Claims**



A mechanism for quickly mounting and aligning any one of a variety of stages on a microscope stand in such a manner that automatic mechanical and optical alignment between the objective nosepiece and each different stage is assured.

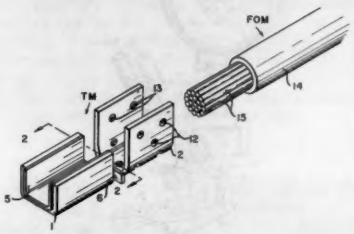
3,572,890
MICROSCOPE SLIDE AND SPINNER
Emil R. Adamik, Laurel, N.Y., assignor to the United States of America as represented by the United States Atomic Energy Commission
Filed Nov. 18, 1968, Ser. No. 776,736
Int. Cl. G02b *21/34*
U.S. Cl. 350—92 **6 Claims**



Means for examining biological cells of the type deposited from sera and used in blood-cell studies, comprising a slide having barrier means supported on a rotatable platform formed with a flat depressed portion for receiving, supporting and rotating the slide to produce a monolayer of cells confined on the slide by the barrier means for examination by conventional microscopy, as well as automatically.

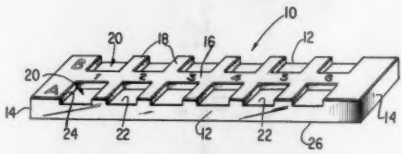
3,572,891
TERMINATION MEMBER FOR FIBER OPTIC MEMBERS
Bruce Cameron Longenecker, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Sept. 30, 1966, Ser. No. 583,372
Int. Cl. G02b *5/16*
U.S. Cl. 350—96 **8 Claims**

A termination member for terminating an end of fiber optic means comprises a first section and a second section interconnected by a bridge section. The first section is adapted to be secured onto stripped fiber optic elements of the fiber optic means and being formed into a desired geometric configuration thereby maintaining the stripped ends in a dense state within the first section and in alignment. The second section is adapted to be secured onto a covering member of



the fiber optic means and it includes means to penetrate the covering member to secure the second section on the covering member. The sections are secured onto the stripped ends and covering member with a minimum of deformation to the fiber optic means to maintain the transmission characteristics of the fiber optic means at almost its original amount.

3,572,892
MULTIPLE WELL TISSUE CULTURE SLIDE
Don P. Metzgar, and James V. Sorrentino, Stroudsburg, Pa., assignors to Richardson-Merrell Inc., New York, N.Y.
Filed Feb. 10, 1969, Ser. No. 797,822
Int. Cl. G02b *21/34*
U.S. Cl. 350—95 **5 Claims**

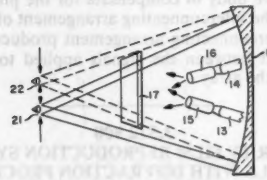


A tissue culture microscope slide comprising a transparent flat plate having depressions or wells on the top surface thereof. The walls defining each well have an opening extending from the top to the bottom of the well adjacent to an edge of the plate to facilitate the drainage of liquids therefrom. The bottom surface of each well is substantially parallel with the bottom surface of the plate. The tissue culture slide after preparation with fixed, confluent, viral infected tissue culture cells can be used with fluorescent labeled reagents and a fluorescent microscope to provide the technologist or clinician with a tool for rapidly screening the sera of patients or animals for a variety of viral agents as measured by the presence in the patients' or animals' serum of antibody against a specific viral agent.

3,572,893
STEROSCOPIC IMAGE DISPLAY DEVICE
Harold F. Bennett, Pasadena, Calif.; Howard T. Betz, Chesterton, Ind.; Ronald L. Ohlhaber; Donald A. Pontarelli, and Arthur V. Appel, Chicago, Ill., assignors to the United States of America as represented by the Secretary of the Navy
Filed Apr. 14, 1969, Ser. No. 815,688
Int. Cl. G02b *27/22*
U.S. Cl. 350—130 **2 Claims**

An image display system for an aircraft having first and

second fiber optic bundles connecting separate periscopes and projection lens and having a first mirror for reflecting



images from said projection lens to a spherical mirror which reflects these images into the eyes of an observer.

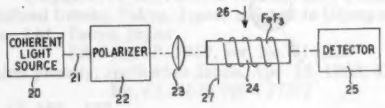
ERRATUM

For Class 350—150 see:
Patent No. 3,572,941

3,572,894
FERRIC FLUORIDE DEVICES

Howard J. Guggenheim, Somerville, and Hyman J. Levinstein, Berkeley Heights, N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Dec. 27, 1968, Ser. No. 787,376
Int. Cl. G02f *1/22*
U.S. Cl. 350—151 **6 Claims**

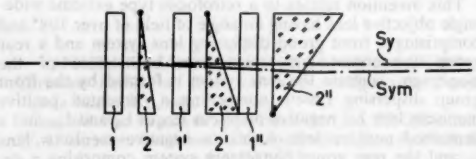


Ferric fluoride evidences a magneto-optic effect of device interest over a broad frequency range including the major part of the visible spectrum. Modulators and isolators, either continuous or pulsed, may be operated over this entire frequency range at room temperature. Precautions to be taken to avoid flawing during growth of the material are described.

3,572,895
OPTICAL DEFLECTION SYSTEM INCLUDING AN ALTERNATING SEQUENCE OF BIREFRINGENT PRISMS AND POLARIZERS

Uwe Schmidt, Pinneberg, and Walter Thust, Hamburg-Niendorf, Germany, assignors to U. S. Philips Corporation, New York, N.Y.

Filed Dec. 3, 1968, Ser. No. 780,743
Int. Cl. G02f *3/00*
U.S. Cl. 350—157 **7 Claims**

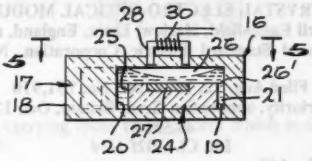


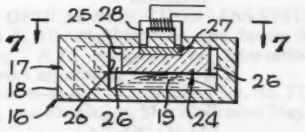
An optical deflection system including a plurality of birefringent prisms separated by polarizers arranged in a sequence. At least one of the prisms has a refracting angle greater than that of any of the other prisms, and is oriented in a direction substantially opposite to that of the refracting angles of the other prisms.

3,572,896
SWITCHABLE LIGHT MODULATING DEVICE

Sidney Bertram, Los Angeles, Calif., assignor to The Bunker-Ramo Corporation, Canoga Park, Calif.

Filed June 26, 1967, Ser. No. 648,781
Int. Cl. G02f *1/28*
U.S. Cl. 350—160 **9 Claims**



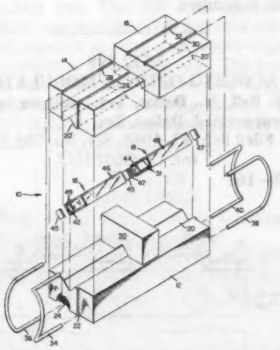


A controllable light reflective device made up of a chamber having at least a portion of its walls transparent to form a window therein with a light reflective structure forming part of or associated with said window. A fluid is placed in the chamber with structure for controllably displacing the fluid to and from a selected portion of the chamber and in optical cooperation with the reflective structure so as to control the amount of incident light which is reflected by the device through the window.

3,572,897
OPTICAL MODULATOR HAVING DISSIPATIVE MATCHING BOUNDARIES

Samuel Bousky, Woodside, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Mar. 6, 1968, Ser. No. 711,032
Int. Cl. G02f *1/28*
U.S. Cl. 350—160 **8 Claims**



An improved optical modulator having means for dissipating the various, extraneous internal energies within the optical crystal, to thus improve the frequency response of the modulator, the means including impedance matching acoustic boundaries and refractive index matching optical boundaries disposed along selected sides and ends of the optical crystal, as well as acoustic and light dissipative or absorbing materials selectively disposed about the sides of the

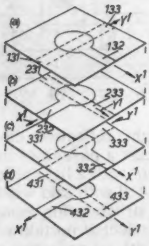
crystal. The acoustic matching on the surfaces of the crystal may be quarter-wave plates which provide an impedance match to the surrounding material to dissipate internal energy due to piezoelectric effects and the like. The refractive index matching on the surfaces of the crystal may also be quarter-wave transparent films of appropriate indices of refraction between the various mediums of the modulator through which the light beam passes. The dissipative materials absorb acoustic energies released to the surround, and extraneous light scattered or internally reflected within the crystal as the beam passes therethrough.

3,572,898

Z-CUT CRYSTAL ELECTRO-OPTICAL MODULATOR

Charles Cecil Eaglesfield, Harlow, Essex, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Aug. 12, 1968, Ser. No. 751,910
Claims priority, application Great Britain, Oct. 12, 1967, 46,532/67
Int. Cl. G02f *1/24*
U.S. Cl. 350—160 **7 Claims**



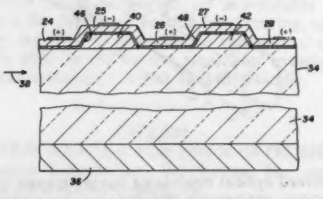
A plurality of Z-cut KDP-type crystal optical modulators, each having a fast axis and a retard axis associated therewith, are arranged in a stack so as to require a potential lower than that required for modulation utilizing a single crystal. Each crystal is formed with an annular recess around a center island on the upper and lower surface and recessed tails extending, in orthogonal relationship one to the other, from each annular recess. The crystals are stacked with alternate plates similarly aligned and adjacent plates oppositely aligned with respect to their fast and retard axes. A conductor is connected between each annular recess and one of two terminals of a source of potential in such manner that the effect of successive plates is additive.

3,572,899

ACOUSTO-OPTICAL MODULATOR

de Lamar T. Bell, Jr., Dallas, Tex., assignor to Texas Instruments, Incorporated, Dallas, Tex.

Filed Feb. 13, 1968, Ser. No. 705,196
Int. Cl. G01f *1/32*
U.S. Cl. 350—161 **5 Claims**



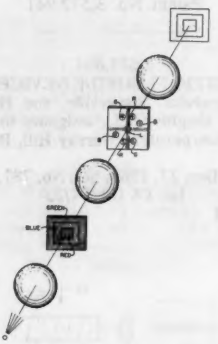
A modulator including an array of electroacoustic transducers for generating and steering an acoustic wave front in a light transmissive body. The acoustic wave front propagates through the transmissive material at an angle approximately proportional to the frequency deviation from a center frequency of an electrical signal applied to the transducers. An acoustic delay means displaces every other electroacoustic transducer an acoustic one-half wavelength from the transmissive body to compensate for the phase inversion produced by the interconnecting arrangement of the transducers. This interconnecting arrangement produces an electrical phase shift between the signals applied to every other transducer in the array.

3,572,900

COLOR TV FILM REPRODUCTION SYSTEM COMPATIBLE WITH DIFFRACTION PROCESS COLOR PROJECTION SYSTEMS

Edmund L. Bouche', Lexington, Mass., assignor to Technical Operations, Incorporated, Burlington, Mass.

Filed Apr. 29, 1969, Ser. No. 820,181
Int. Cl. G02b *27/38*
U.S. Cl. 350—162SF **11 Claims**



This disclosure depicts methods and apparatus for improving the fidelity of displays produced by diffraction process color recording and reconstruction systems. More particularly, the disclosure concerns color TV film reproduction systems which are capable of displaying with enhanced fidelity either conventional color transparency cine film, or alternatively, monochrome cine records in which color information is stored on spatial carriers. The illustrated systems and methods involve, inter alia, predetermining the azimuthal orientation of color-encoding spatial carriers and decoding filter means in order to suppress moire patterns and minimize color distortions in color displays.

3,572,901

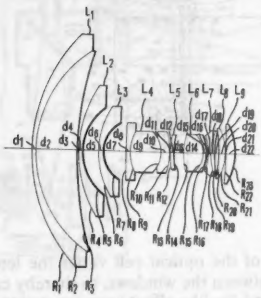
WIDE ANGLE OBJECTIVE LENS HAVING A FIELD ANGLE OF 108°

Ikuo Mori, Kawasaki-shi, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed May 7, 1969, Ser. No. 822,466
Claims priority, application Japan, June 5, 1968, 43/38012
Int. Cl. G02b *9/64*
U.S. Cl. 350—176 **2 Claims**

This invention relates to a retrofocus type extreme wide-angle objective lens having an angle of field of over 108° and comprising a front group dispersing lens system and a rear group convergent lens system on both sides of the diaphragm, wherein the lens system is formed by the front group dispersing system comprising a cemented positive meniscus lens L_1, negative meniscus lenses L_2 and L_3, and a cemented positive lens 4, and a negative meniscus lens l_5, and the rear group convergent system comprising a cemented positive lens L_6, a cemented negative lens L_7, and positive meniscus lenses L_8 and L_9 having the concave surface faced to the direction of incoming light respectively, and the above mentioned two groups are arranged on both sides of the diaphragm, and the aberrations are balanced and the

sagittal image surface which tends to become positive in the marginal region of the picture is well corrected by widening the position of inflecting point of the meridional image surface by giving the following conditions:



$R_{11} < R_{12}$

II $d_{13} > d_{12}$

III $d_{14}+d_{15} > d_{16}$

Where R is a radius of curvature and d is the center thickness of a lens or lens spacing.

3,572,902

HIGH MAGNIFICATION ACHROMATIC MICROSCOPE OBJECTIVE HAVING A WIDE, FLAT FIELD

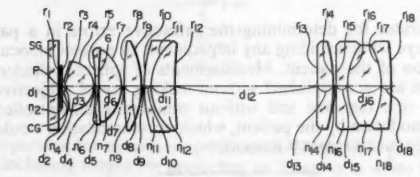
Toshifumi Uetake, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 8, 1969, Ser. No. 814,239

Claims priority, application Japan, Apr. 15, 1968, 43/24886

Int. Cl. G02b *9/64, 21/02*

U.S. Cl. 350—177 **1 Claim**



A high magnification microscope objective which has a wide field of about the field number of 30; in which the curvature of the field is sufficiently eliminated and the in-axis chromatic aberration is completely eliminated to the extent which is achieved by an apochromatic objective.

3,572,903

SPHERICALLY CORRECTED FRESNEL LENSES

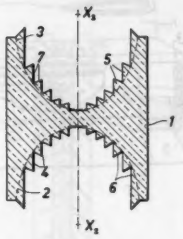
Christian Hofmann, Jena, Germany, assignor to Jenoptik Jena G.m.b.H., Jena, Germany

Continuation-in-part of application Ser. No. 559,686, June 20, 1966, now abandoned. This application June 6, 1969, Ser. No. 831,281

Int. Cl. G02b *3/08*

U.S. Cl. 350—211 **1 Claim**

The optically effective face of a Fresnel lens is so shaped that two separate points in its optical axis are imaged without spherical aberration. Said face carries the Fresnel echelons. If there are echelons on both sides of the Fresnel lens, both



echelon carrying faces have a form which is defined by an equation.

3,572,904

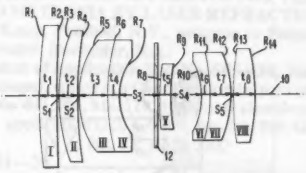
OPTICAL REDUCTION LENS SYSTEM

Raymond E. Tibbetts, Mahopac, and Janusz S. Wilczynski, Ossining, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of application Ser. No. 573,698, Aug. 19, 1966, now abandoned. This application May 5, 1969, Ser. No. 825,120

Int. Cl. G02b *9/62*

U.S. Cl. 350—215 **4 Claims**



A lens group is described for use as a reduction lens. The lens group consists of eight lens elements. The first and second lens elements are meniscus singlet lenses. The third and fourth lens elements are cemented together to form a meniscus doublet lens. The fifth lens element is a negative meniscus singlet lens and the sixth and seventh lens elements are cemented together to form a meniscus doublet lens. The eighth lens element is a biconvex lens. The lens group has a high uniform resolution over the useable field, a flat image field with practically no zonal astigmatism, no mechanical vignetting, and virtually unmeasurable distortion.

3,572,905

LENS HOOD

Werner Schlapp, Asslar Kreis Wetzlar, Germany, assignor to Ernst Leitz GmbH, Wetzlar, Germany

Filed Apr. 4, 1969, Ser. No. 813,509

Claims priority, application Germany, Apr. 10, 1968, Jan. 7, 1968 L47,154; P 19 00 547.1

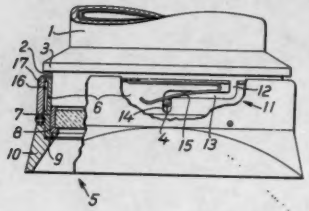
Int. Cl. G02b *7/02*

U.S. Cl. 350—257 **8 Claims**

In the tubular rear member of a lens hood is provided at least one slot extending in axial and in circumferential direction. The slot is adapted to receive a pin stationarily secured on the front portion of the objective mount, and spring means are arranged near the slot for resiliently locking the pin in the slot when the hood is mounted on the lens.

The inner diameter of the tubular member corresponds to the standardized diameter of a filter series so that different filters can be inserted into the hood prior to mounting. The

inner surface of the tubular member is provided with a shoulder against which the filters abut, and in one particular embodiment of the invention means for rotating the filter are incorporated.

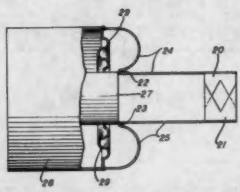


3,572,906

AUTOMATIC ELECTRORESPONSIVE LIGHT REGULATOR UTILIZING TRANSLATIONAL DRIVE MOTOR

Sotirios C. Kitsopoulos, Summit; Rembert R. Stokes, Middletown, and Werner Thommen, Marlboro, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed June 5, 1968, Ser. No. 734,745
Int. Cl. G02f *1/30*
U.S. Cl. 350—269 **5 Claims**



The effects of friction and vibration are eliminated from an automatically regulated iris, optical filter, or similar arrangement by employing an electroresponsive drive motor with translational drive means. Iris blades or the like are secured to flexible members, the flexure of which is varied by translational motion of the drive system in response to low-power control signals. With this construction, sliding friction is avoided and the system is virtually nonresponsive to vibration.

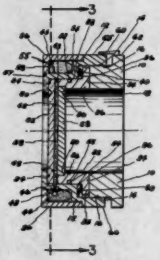
3,572,907

OPTICAL CELL FOR ATTENUATING, SCATTERING AND POLARIZING ELECTROMAGNETIC RADIATION

Ivan Cindrich, Southfield, Mich., assignor to Chain Lakes Research Corporation, Detroit, Mich.

Filed Apr. 28, 1969, Ser. No. 819,733
Int. Cl. G02b *5/24*
U.S. Cl. 350—312 **3 Claims**

An optical cell for attenuating, scattering or phase shifting electromagnetic radiation such as light comprising an annular member telescopically engaged with a mounting ring to thereby define a chamber. The ends of the chamber are formed by windows supported in the mounting ring and in a cylindrical frame in contiguous relationship with the annular member. A fluid having light affecting properties fills the chamber and is transferable between the chamber and a reservoir in fluid communication with the chamber. Telescopic operation of the optical cell varies the length of the fluid light path between the windows, to thereby cause variable attentuating and the like effect upon traversing light.

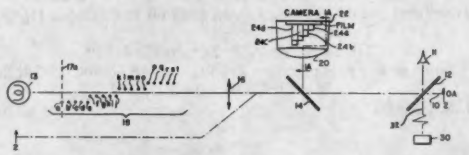


3,572,908

APPARATUS FOR MEASURING AND RECORDING REFRACTIVE ERRORS OF A PATIENT'S EYE

Bernard Grolman, Worcester, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Mar. 24, 1969, Ser. No. 809,526
Int. Cl. A61b *3/14, 3/10*
U.S. Cl. 351—6 **6 Claims**



Apparatus for determining the refractive errors in a patient's eye while avoiding any impediment to normal binocular vision of the patient. Measurements of sphere, cylinder, and axis are accomplished without making use of subjective patient oral response and without stimulating uncontrolled accommodation by the patient, which accommodation would make the measurements inaccurate.

3,572,909

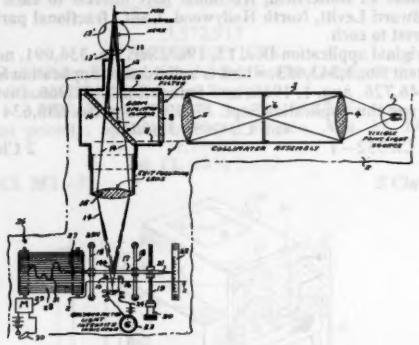
INFRARED OPTOMETER

Robert E. VanPatten, Dayton, Ohio, and Paul W. Lappin, San Antonio, Tex., assignors to the United States of America as represented by the Secretary of the Air Force

Filed Aug. 5, 1969, Ser. No. 847,585
Int. Cl. A61b *3/10*
U.S. Cl. 351—6 **5 Claims**

An infrared optometer device which allows manual or automatic measurement, under either local or remote control, of the refractive index of a man or animal eye in which a collimated beam of light is directed through an infrared filter and by a "beam splitter" mirror at 90° into a subject's eye, and the light reflected by the fundus of the eye and exiting back through the lens of the eye from the interior through the beam splitter is converged by a suitable lens toward a focal point at which is located an adjustable photo sensor which detects maximum intensity of the exit beam illumination, calibrated in terms of dioptric change in refractive status. The positioning of the photo sensor in order to detect the maximum intensity of the reflected illumination through

the lens of the eye is calibrated in terms of dioptric change in the reflective status. The positioning of the photo sensor is



controlled manually or remotely, and completely automatic and continuous operation is contemplated.

3,572,910

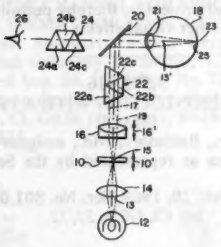
APPARATUS FOR MEASURING THE REFRACTIVE ERRORS OF AN EYE

Charles J. Koester, Sudbury, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Mar. 24, 1969, Ser. No. 809,781

Int. Cl. A61b *3/10*

U.S. Cl. 351—13 **6 Claims**



Apparatus for determining refractive errors of a patient's eye including means for projecting an image of a white light source pattern which is wavelength-dispersed into said eye and onto the retina thereof and means for enabling a refractionist or the like to observe the wavelength recombined image reflected by the retina for determining the sharpness of focus thereof. During the observation, the apparatus is adjusted to focus the image for maximum sharpness upon the retina and the amount of focusing required from a normal eye refraction position measured to determine the refractive error of the patien's eye.

3,572,911

NEAR-POINT CARDS FOR BINOCULAR REFRACTION

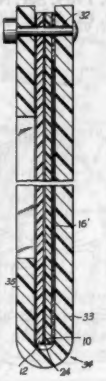
Bernard Grolman, Worcester, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed June 30, 1969, Ser. No. 837,631

Int. Cl. A61b *3/02, 3/08;* **G02b** *5/30*

U.S. Cl. 351—33 **6 Claims**

Near-point cards for binocular refraction and a lamination process for producing them are described wherein the product comprises a film having thereon a reproduction of the target for one eye with its image side upward cemented to a film having thereon a reproduction of the target for the other eye with its image side downward. The back of the film for the one eye is silvered and the two films are provided with a single frame which is riveted to center the targets. The



process includes the steps of aligning the films, laminating them, realigning if necessary, spraying the back of the bottom film, and mounting the laminated films in a frame.

3,572,912

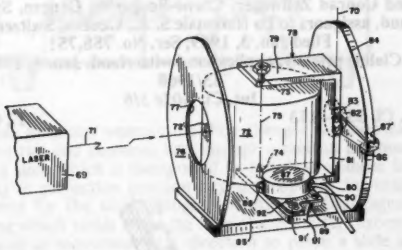
METHOD OF AND APPARATUS FOR TESTING AMETROPIA BY LASER REFRACTION

Henry A. Knoll, Penfield, N.Y., assignor to Bausch & Lomb, Incorporated, Rochester, N.Y.

Continuation of application Ser. No. 555,438, June 6, 1966, now abandoned, which is a Continuation-in-part of application Ser. No. 441,141, Mar. 19, 1965, now abandoned. This application Oct. 6, 1969, Ser. No. 866,425

Int. Cl. A61b *3/02*

U.S. Cl. 351—36 **24 Claims**

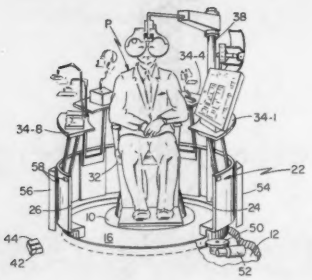


A method of and apparatus for testing eyes by laser refraction are provided in which a laser beam is projected onto a distant rotating and diffusing screen which is viewed by the patient. A visual pattern is formed on the screen which, to eyes having abnormal refractive condition, appears to move when the screen is rotated. The direction and rate of the apparent movement are indications of the type and magnitude of refractive abnormality present in the eyes. By rotating the screen along an axis parallel to the laser beam, astigmatic abnormalities are determined. The system in combination with various other equipments such as refractors and variable focal length telescopes provides direct correction of the refractive abnormalities of the eyes being tested. The direct correction is achieved by either terminating the apparent motion of the pattern, or by quantitatively determining the direction and rate of the motion.

3,572,913
COMPREHENSIVE SUPPORT FOR OPHTHALMIC EXAMINATION APPARATUS AND INSTRUMENTS

Donald R. Korb, Boston; Donald W. Horley, Arlington, and Peter L. Lindenmuth, Boston, Mass., assignors to Boylston Research Associates, Boston, Mass.

Filed Feb. 3, 1969, Ser. No. 795,864
Int. Cl. A61b 3/00
U.S. Cl. 351—38 9 Claims

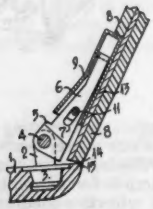


Ophthalmic examination apparatus includes a fixed base structure that includes a circular track and a patient support chair positioned within the circular track. A generally cylindrical instrument support structure is supported for rotation on the circular track and has an aperture in it so that a patient may enter and so that the examiner may have direct access to the patient. An electrical motor drives the support structure on the circular track and a position switch and a series of spaced switch actuators control the positioning of particular instruments in proper position for examination purposes.

3,572,914
ARRANGEMENT FOR HINGING A SIDEPIECE TO THE LENS BOW OF A SPECTACLES FRAME

Roger Piola, Geneva; Andre Guenin, Petit Lancy, Geneva, and Conrad Zellweger, Chene-Bougeries, Geneva, Switzerland, assignors to La Nationale S. A., Geneva, Switzerland

Filed Jan. 3, 1969, Ser. No. 788,751
Claims priority, application Switzerland, Jan. 4, 1968, 83/1968
Int. Cl. G02c 5/6
U.S. Cl. 351—113 12 Claims

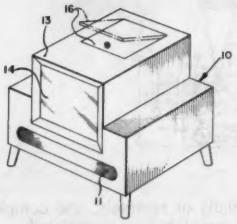


A hinge pin connecting together a hinge member fixed to the lens retaining portion and a hinge member resiliently connected to a temple is constrained so to move that the temple outer corner pressing against the lens retaining portion substantially serves as the virtual pivoting axis for the temple.

3,572,915
APPARATUS FOR PRODUCING FORMS AND COLORS IN MOTION

James F. Butterfield, North Hollywood, Calif., assignor to James F. Butterfield, fractional part interest to each and Edward Levitt, North Hollywood, Calif., fractional part interest to each

Original application Dec. 11, 1963, Ser. No. 336,091, now Patent No. 3,343,453, which is a division of application Ser. No. 46,726, Aug. 1, 1960, now Patent No. 3,122,966. Divided and this application Sept. 13, 1967, Ser. No. 688,634
Int. Cl. G03b 31/00
U.S. Cl. 352—1 2 Claims

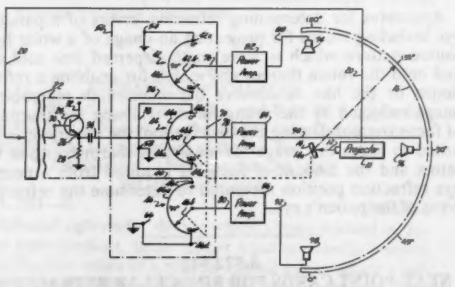


Music and other sounds are combined and synchronized with images in motion. This is done with a phonograph disc which has sound tracks on one portion and image bands on another portion. A picture-sound projector reproduces the sound through a loudspeaker while the images are simultaneously projected on a screen. The images may be picked up simultaneously from several bands on the disc and superimposed on the screen so that continuous motion of patterns may occur simultaneously in several directions. The patterns are turned on and off by a programming means on the disc, which actuates the illumination means for each image band in the picture-sound projector, thereby permitting animation of the images, and other visual effects.

3,572,916
SOUND SYNCHRONIZATION WITH A PROJECTED IMAGE

John P. Belton, Jr., Baltimore, Md., assignor to the United States of America as represented by the Secretary of the Navy

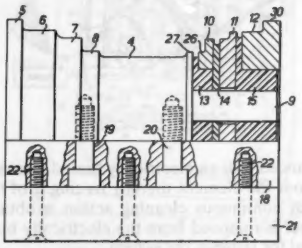
Filed Feb. 20, 1969, Ser. No. 801,055
Int. Cl. G03b 21/32
U.S. Cl. 352—11 2 Claims



A binaural or stereo sound system for use with a dirigible projection system having a single sound track, the sound system including a plurality of speakers and corresponding power amplifiers, a preamplifier for amplifying signals from the sound track pickup, and a distribution means comprising ganged potentiometers receiving the preamplifier output and having wipers positioned with the dirigible projection system.

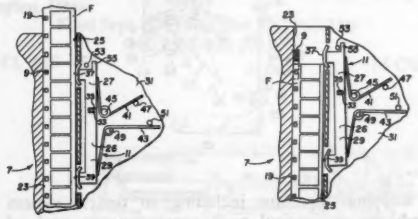
The potentiometer wipers are connected to respective ones of the power amplifiers whereby the speakers provide a stereo sound reproduction corresponding to the position of a projected image.

3,572,917
PICKUP DEVICES
Bernard Albert Bentley, Camberley, England, assignor to Essoldomatic Limited, London, England
Filed Sept. 16, 1968, Ser. No. 753,255
Claims priority, application Great Britain, Aug. 17, 1967, 37,994/67
Int. Cl. G03b *21/52*
U.S. Cl. 352—92 **5 Claims**



An electrically conductive pickup for sensing electrically conductive areas on a moving flexible film comprising a fixed support curved in a plane normal to the surface of the film for effecting sliding contact therewith, and having at least two mutually insulated conductive surfaces spaced apart in the direction of the film width.

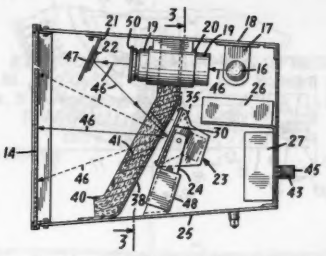
3,572,918
FILM GUIDE CHANNEL FOR SPROCKETLESS CINEMATOGRAPHIC DEVICE
Kurt Steisslinger, Stuttgart-Wangen, Germany, assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Aug. 26, 1968, Ser. No. 755,322
Claims priority, application Germany, Sept. 1, 1967, K63253
Int. Cl. G03b *1/44, 1/48;* **B65h** *23/02*
U.S. Cl. 352—224 **5 Claims**



A film guide channel at the projection gate of a sprocketless motion picture projector or the like includes a film-aligning pressure member which releases its pressure from the trailing end of the film after the trailing end passes the pull-down claw to facilitate automatic withdrawal of the trailing end from the gate.

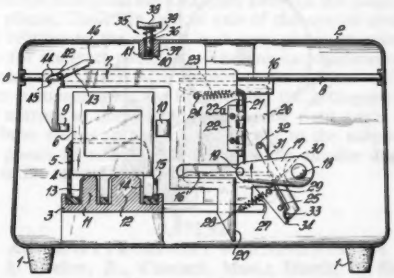
3,572,919
SOUND TO LIGHT VISUAL VOCALIZATION SYSTEM
Wilson C. Hayes, Oakmont, Calif. (634 Sheridan Square, Evanston, Ill. 60202)
Filed Mar. 11, 1968, Ser. No. 711,944
Int. Cl. A63j *17/00*
U.S. Cl. 353—15 **11 Claims**

A loudspeaker is closed by a resilient membrane mounted across its mouth and at least one reflective surface is attached to the membrane. The reflective surface receives a beam of light from a stationary source and reflects a spot of light onto a screen positioned in front of the resilient membrane. Sound waves emanating from the speaker cone cause the resilient membrane and attached reflective surface to



vibrate in response thereto, thereby causing the reflected light spot to trace visible different patterns on said screen. These patterns help deaf persons learn to vocalize much sooner than they would with conventional therapies.

3,572,920
PROJECTOR FOR PHOTOGRAPHIC TRANSPARENCIES
Rolf Heinzmann, Schmiden, Germany, assignor to Robert Bosch Elektronik Und Photokino GmbH, Stuttgart-Unterturkheim, Germany
Filed Sept. 19, 1969, Ser. No. 851,168
Claims priority, application Germany, Aug. 20, 1968, P 17 97 132.3
Int. Cl. G03b *23/02*
U.S. Cl. 353—103 **11 Claims**

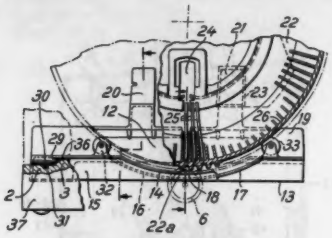


A slide projector wherein the slide changer is reciprocable between two end positions and through a median position in which a slide which is transported by the slide changer from the tray to projection position begins to open a diaphragm. The drive for the slide changer comprises a disengageable coupling which yields when the slide changer offers excessive resistance to movement in a direction to place a slide into projection position. A manually operable blocking device intercepts the slide changer before the latter reaches its median position so that the coupling is then disengaged and the slide which is pushed by the slide changer cannot reach its projection position and cannot open the diaphragm.

3,572,921
SLIDE PROJECTOR FOR STRAIGHT AND CIRCULAR SLIDE TRAYS
Hans Mulch, Wetzlar, Germany, assignor to Ernst Leitz GmbH Optische Werke, Wetzlar Lahn, Germany
Filed May 2, 1969, Ser. No. 821,356
Claims priority, application Germany, May 8, 1968, June 19, 1968, P 17 72 391.0; P 17 72 682.8
Int. Cl. G03b *23/06*
U.S. Cl. 353—117 **15 Claims**

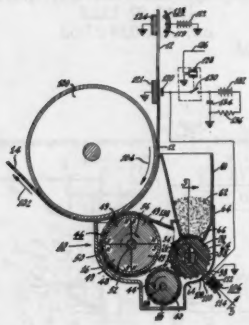
An adapter is disclosed which can be removably positioned in the tray receiving chute for a slide projector. The chute

normally receives straight trays. The adapter positions circular trays in proper position relative to the slide exchange mechanism. The adapter may additionally be provided with a



transmission to change the effective step length as between the regular tray moving projector pinion and the required angle for rotating a circular tray from compartment to compartment.

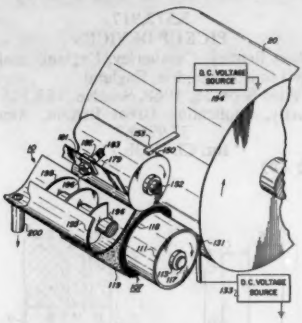
3,572,922
APPARATUS FOR DEVELOPING ELECTROSTATIC IMAGES
Roger G. Olden, Gwynedd, Pa., assignor to RCA Corporation
Filed Dec. 19, 1968, Ser. No. 785,239
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 **18 Claims**



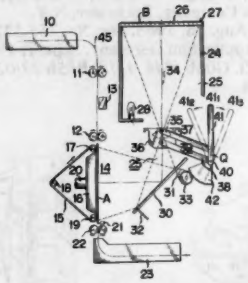
Developing apparatus for an electrostatic printer comprises a roller formed by a plurality of peripherally-slotted wheels frictionally mounted on a shaft for rotation therewith. The roller is in contact with a source of toner particles. Either manually or electrically operated means are provided to overcome the driving forces selectively between one or more of the wheels and the rotating shaft to stop them from rotating with the shaft. Thus, selected portions of the toner particles, in the peripheral slots of the rotating wheels, can be conveyed to electrostatic images on a recording medium according to the charge patterns thereon.

3,572,923
CLEANING METHOD AND APPARATUS FOR ELECTROSTATIC COPYING MACHINES
Donald J. Fisher, and Gerard T. Severynse, Fairport, N.Y., assignors to Xerox Corporation, Rochester, N.Y.
Filed Aug. 26, 1968, Ser. No. 755,267
Int. Cl. G03g *15/00*
U.S. Cl. 355—15 **7 Claims**

Method and apparatus for removing residual images from a recording surface for reuse in a copying system. This is effected by wiping the electrostatic recording surface with an electrically nonconductive element to mechanically remove the toner particles from the surface. At the same time, an electrical bias of a polarity opposite that of the toner particles of sufficient magnitude is applied to the element so as to pull toner from the surface onto the element thereby removing substantially all of the toner from the surface. The element is advanced past an electrically biased means to remove the toner from the element thereby freeing it of the residual toner so that continuous cleaning action is obtained. After this, the toner is removed from the electrically biased means and collected for reuse in the system.



3,572,924
COPYING APPARATUS
Yushi Matsumoto, and Tsuneo Tashiro, Tokyo, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan
Filed Oct. 9, 1968, Ser. No. 766,124
Claims priority, application Japan, Oct. 12, 1967, 42/65,181
Int. Cl. G03b *27/70*
U.S. Cl. 355—27 **9 Claims**

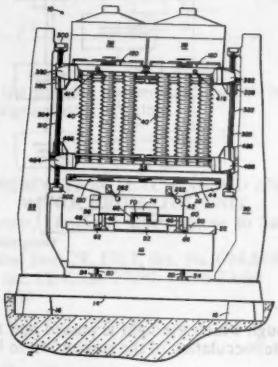


A copying apparatus including an optical system for reproducing an original on a copying paper, each of the original and the copying paper having its one edge located at a definite position. The optical system is arranged such that the edge of the original is always focused on the edge of the copying paper with the original reproduced in a predetermined area of the copying paper irrespective of the multiplying power.

3,572,925
STEP AND REPEAT CAMERA WITH COMPUTER CONTROLLED FILM TABLE
Billy D. Ables, Richardson; Charles Fort, Dallas, and Edmund D. Jackson, Richardson, Tex., assignors to Texas Instruments, Incorporated, Dallas, Tex.
Filed Oct. 18, 1967, Ser. No. 676,211
Int. Cl. G03b *27/44*
U.S. Cl. 355—46 **13 Claims**

A film support table is movable in the X and Y coordinate directions by X and Y drive systems. A laser interferometer

and fringe counter detects movement of the table in the X and Y coordinate directions by fringe counts. A projection system simultaneously projects a plurality of images onto the film carried by the table after the table is moved to each of a plurality of predetermined exposure positions. A reference detector system detects when the table is at a zero reference position and resets the counters. A digital computer is programmed to compute the coordinate of each exposure position and then, based on the current barometric pressure,



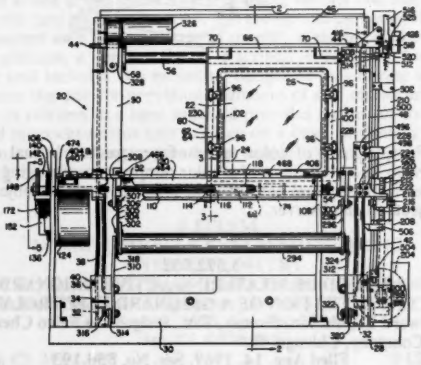
compute the number of fringe counts from the reference position to the first exposure position. The computer then operates the drive system in such a manner as to move the table to the exposure position by continuously computing the position and velocity of the table from the readings of the fringe counters. Then the table is maintained at the exposure position during the exposure period by continuously determining the position of the table from the fringe counters and operating the drive system to produce forces for correcting the positional error.

3,572,926

X AND Y COORDINATE AXES POSITIONING MECHANISM

Stanley F. Coil, Washington, and William R. Horst, Dayton, Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Filed Sept. 27, 1968, Ser. No. 763,159
Int. Cl. G03b *17/32*
U.S. Cl. 355—53 **14 Claims**



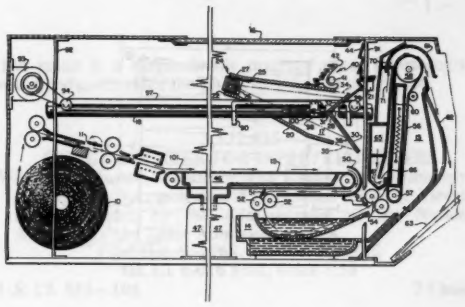
A positioning mechanism for moving a film carrier in a plane along *x* and *y* coordinate axes therein. The means for supporting and moving the film carrier in said plane includes a torsion bar which facilitates accurate movement along said axes, which is necessary when the mechanism is used to produce or locate extremely small images of the photochromic type on a film. Simple controls including electrical relays and solenoids are used to control the indexing of the film carrier.

3,572,927

REPROGRAPHIC SCANNING OPTICS

Kenneth M. Li Donnici, Brooklyn, and Richard B. Kosten, Bayside, N.Y., assignors to Ing. C. Olivetti & C., S.p.A.

Filed Oct. 31, 1968, Ser. No. 772,290
Int. Cl. G03b *27/50, 27/70*
U.S. Cl. 355—66 **6 Claims**



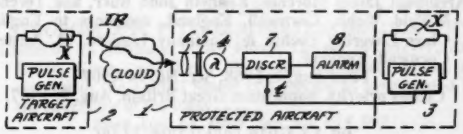
An optical system in reprographic apparatus having substantially parallel subject and copy planes. A folded optical system is provided in conjunction with orthogonally related mirrors for extending the focal path between the subject and copy planes. The main optical axis of the optical system is tilted relative to the subject and copy planes to gain bulk space for compact packaging. The angular displacement of the main optical axis with respect to the subject and copy planes is compensated for by orienting the orthogonally related mirrors so that a line bisecting the right angle which they form makes an angle with respect to the subject and copy planes of substantially one-half the angular displacement of the optical axis.

3,572,928

AIRCRAFT PROXIMITY WARNING SYSTEM

John A. Decker, Jr., Concord, Mass.; Martin O. Harwit, Ithaca, N.Y., and Melvyn G. Morris, Sharon, Mass., assignors to Comstock & Wescott, Inc., Cambridge, Mass.

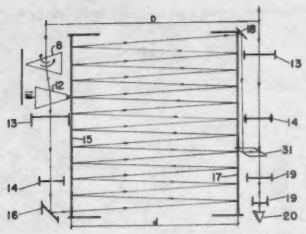
Filed May 19, 1969, Ser. No. 825,741
Int. Cl. G08g *5/04*; **G01c** *3/08*
U.S. Cl. 356—4 **11 Claims**



An airborne system to be carried by each protected aircraft includes a pulsed, infrared emitting xenon flash lamp and a photoelectric circuit for sensing the flashes from other target aircraft controlling an alarm or display. The photocell is IR filtered to discriminate against light sources low in IR. The sensing circuits discriminate against light from steady and intermittent sources other than the xenon lamp. Reflections of flashes from the protected craft's lamp are rejected by blocking the sensing circuit during the duration of the lamp flash, and to avoid coincidence of the protected and target craft flashes the flash repetition is randomly varied

about the mean rate. An array of photoelectric cells viewing different zones ahead of the protected aircraft controls a visual display indicating the location and range of target aircraft.

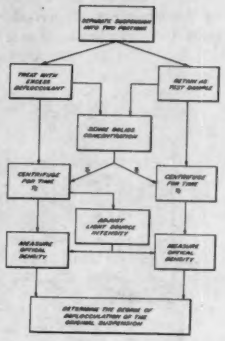
3,572,929
RANGE FINDER WITH ROTATING PRISM & SUCCESSIVE REFLECTIONS
Jamshid Hassibi, 600 Worth St., Pittsburgh, Pa.
Filed Apr. 9, 1968, Ser. No. 719,961
Int. Cl. G01c *3/12*
U.S. Cl. 356—16 **1 Claim**



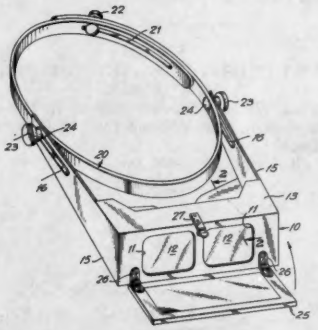
This is a high accuracy range finder employing a rotating prism and successive reflections to increase the resolving power of the range finder. The rotating prism is rotated about an axis distant from the axis of the prism and preferably perpendicular to the surface of light path throughout the prism. In the preferred embodiment, the axial-displacement of the light rays, which displacement is a function of the rotational angle of the first prism is corrected by a second prism which is displaced longitudinally in a direction parallel to its axis. A plurality of fixed mirrors are employed to cause successive reflection of the light rays from the prisms between two widely spared parallel surfaces so that when the prisms are out of adjustment the offset of light rays is amplified. Preferably the number of the successive reflections should be at least 20 reflections if the two surfaces are 20 centimeters long.

3,572,930
APPARATUS AND METHOD FOR MEASURING THE DEGREE OF DEFLOCCULATION OF A SUSPENSION OF FINE PARTICLES
Archibald James Morcom; Kenneth John Burr, and Terence Wilfrid Webb, Cornwall, England, assignors to English Clays Lovering Pochin & Company Limited, St. Austell, Cornwall, England
Filed Aug. 1, 1968, Ser. No. 749,507
Claims priority, application Great Britain, Aug. 7, 1967, 36220/67
Int. Cl. G01n *1/00, 15/04, 21/00*
U.S. Cl. 356—36 **9 Claims**

An apparatus and process for measuring and controlling the degree of deflocculation of a suspension of fine particles. The apparatus includes a centrifuge having two separate compartments into one of which there is introduced a portion of the suspension under examination and into the other of which there is introduced a further portion of the suspension under examination which has been treated with excess deflocculant so as to completely deflocculate said further portion. The compartments of the centrifuge are each provided with a window whereby light can be passed through the portions of the suspension thereunder. Photocells are employed to measure the optical densities, and thus the solids concentrations, of the parts of the suspension in the compartments through which the light is passed and this enables the degree of deflocculation of the suspension to be ascertained.



3,572,931
SURFACE COMPARATOR
Hans Adler, New York, N.Y., assignor to Florence Wexler, New York, N.Y. and Hans Adler, New York, N.Y.
Filed May 19, 1967, Ser. No. 639,872
Int. Cl. G01j *5/52, 3/46, 3/48*
U.S. Cl. 356—46 **12 Claims**

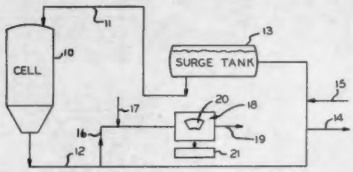


For purposes of color and surface structure visual comparison, the placement of a color temperature changing light filter in the optical path of light reflected from an object or objects to an observer.

3,572,932
METHOD OF MEASURING ACTIVE GRIGNARD CONCENTRATION OF A GRIGNARD ELECTROLYTE
Edward E. Johnson, Sweeny, Tex., assignor to Nalco Chemical Company, Chicago, Ill.
Filed Aug. 14, 1969, Ser. No. 850,193
Int. Cl. B01k *1/00;* **G01j** *3/00*
U.S. Cl. 356—74 **14 Claims**

The active Grignard concentration in an electrolyzed Grignard electrolyte is measured by mixing a sample of the

electrolyte with a solution of an oxidation-reduction indicator and subjecting the mixture to spectrophotometric analysis



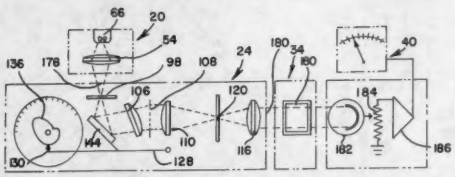
to determine the percent transmittance which is directly related to the Grignard concentration.

3,572,933

COMBINATION TEACHING AID AND MONOCHROMATOR UNIT

Roy E. Boostrom, Elmhurst, Ill., assignor to Sargent-Welch Scientific Company

Filed Dec. 29, 1967, Ser. No. 694,518
Int. Cl. G03b *27/30;* **G09b** *23/06*
U.S. Cl. 356—100 **5 Claims**



A monochromator unit adapted to diffract light into monochromatic components and to simplify teaching of a theory of optical instrumental analysis, wherein a housing having an operable top cover portion and a component-protecting but optically transparent cover unit thereunder is provided, said unit also including a mirror means for directing an incident light beam onto a diffraction grating, and wherein the means supporting the mirror means is movable by a cam which is mounted in association with an indicator means and an index for indicating the wavelength of the beam produced, and wherein collimating slits are provided for the incident beam and for directing the beam of monochromatic light onto a directed target area.

In a preferred embodiment, the monochromator includes a cardioid profile cam arrangement, a support for the mirror unit which is supported by a leaf spring on one end and rests on the cam on the other end, and the optical components are mounted on a common base to simplify assembly of the unit. In addition, a construction is described wherein the base of the unit includes two mounting flanges or legs having screw means thereon for providing alignment of said monochromator in relation to a base unit and provides means for locking said monochromator unit in place on a base, said adjustment means and locking means being simple and independent of each other in operation.

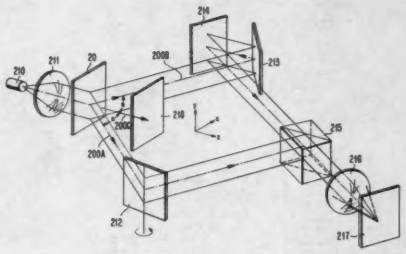
3,572,934

LONGITUDINALLY REVERSED SHEARING INTERFEROMETRY

Olof Bryngdahl, Los Gatos, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 9, 1968, Ser. No. 758,535
Int. Cl. G01b *9/02*
U.S. Cl. 356—106 **8 Claims**

A type of shearing interferometry is presented in which an interferogram is formed by the object wavefront and its replica folded in the longitudinal direction. An off-axis hologram of the object is first made in a conventional manner. The hologram is then illuminated to form a real and a virtual image. The real and the virtual images are superimposed.



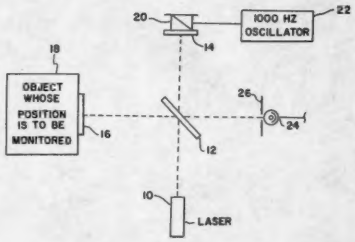
The result is a longitudinally reversed shear interferogram which indicates twice the phase variation of the object.

3,572,935

FRINGE COUNTER FOR INTERFEROMETERS

William E. Howell, Yorktown, and Kazmere C. Romanczyk, Chesapeake, Va., assignors to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Oct. 9, 1968, Ser. No. 766,245
Int. Cl. G01b *9/02;* **G06f** *7/38*
U.S. Cl. 356—106 **7 Claims**



A device for counting fringes produced by an interferometer. An interferometer with a single photomultiplier is used to determine the magnitude and direction of motion of an object to a digital sensitivity of one-eighth of a wavelength. By an electronic squaring technique the digital sensitivity of the device can be increased to one-sixteenth or one thirty-second of a wavelength.

3,572,936

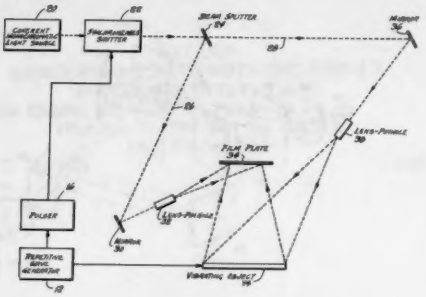
STROBOSCOPIC INTERFEROMETRIC HOLOGRAPHY

Cameron D. Johnson, Gales Ferry; Gerald M. Mayer, East Lyme, Conn., and Peter Shajenko, Hampden, Mass., assignors to the United States of America as represented by the Secretary of the Navy

Filed Apr. 14, 1969, Ser. No. 815,597
Int. Cl. G01b *9/02*
U.S. Cl. 356—109 **7 Claims**

Means and method for stroboscopic interferometric holography consisting of passing the laser beam which is used to illuminate the object through a Pockels cell and pulsing the Pockels cell by means of a pulse which is derived from, and therefore synchronized with, a sine wave generator whose output is used to vibrate said object. The pulse duration and its phase position with respect to the sine wave are variable. A double-image hologram is made consisting of a stroboscopic (pulsed) exposure at the positive peak of the sine wave and at either the zero value or the negative peak, resulting in

a hologram of the object including a gross interference fringe pattern. The hologram can then be converted to a conventional photograph. A second technique includes rotation of the object through a small angle before the second image is made.

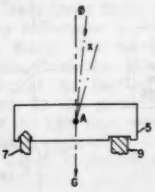


3,572,937

METHOD AND APPARATUS FOR INTERFEROMETRIC MEASUREMENT OF MACHINE SLIDE ROLL

Richard R. Baldwin, Clinton, Tenn., assignor to the United States of America as represented by the United States Atomic Energy Commission

Filed Nov. 4, 1968, Ser. No. 773,113
Int. Cl. G01b *9/02*
U.S. Cl. 356—110 **7 Claims**



A method and apparatus for interferometric measurement of machine slide roll has been provided wherein split beams from a laser mounted on a machine bed are intersected to generate a fringe pattern extending along and normal to an axis which is parallel to the axis of a machine slide. A light-transmitting hologram previously provided with a similar fringe pattern is mounted to the slide and is oriented relative to the generated pattern so as to transmit light characterized by a "no-roll" Moire fringe pattern. Any roll of the machine slide rotates the hologram, producing a proportional change in the "no-roll" Moire fringe spacing.

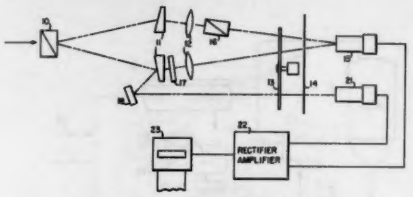
• 3,572,938

POLARIMETER

James N. Bradford, Falls Church, Va., assignor to the United States of America as represented by the Secretary of the Navy

Filed Feb. 18, 1969, Ser. No. 800,211
Int. Cl. G01n *21/40*
U.S. Cl. 356—116 **5 Claims**

A polarimeter devised to measure very small changes in the state of polarization of polarized light by the use of a prism which splits the incident light into two beams or light paths of orthogonal polarization, the intensity of each path being the intensity of that polarization component in the original beam. The polarimeter includes a differential measuring and recording system that compares the relative intensities in the two paths to determine the polarization of the incident light.

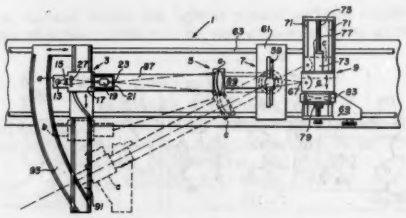


3,572,939

PHOTOELECTRIC LENS BENCH AND METHOD FOR TESTING OPTICAL SYSTEMS

Bruce C. Burdick, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed July 22, 1968, Ser. No. 746,571
Int. Cl. G01b *9/00*
U.S. Cl. 356—124 **11 Claims**



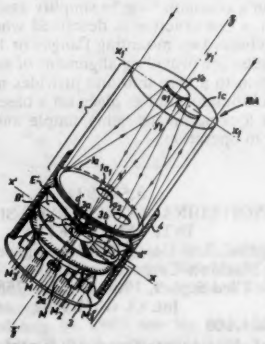
An improved method and apparatus for testing optical systems utilizing one or more cosine potentiometers to correct for errors resulting from perspective and magnification foreshortening or lengthening when off-axis measurements are made.

3,572,940

METHOD AND A DEVICE FOR MEASURING THE SIGHTING ERROR OF AN OPTICAL APPARATUS

Pierre Poubeau, Gif-sur-Yvette, France, assignor to Nord-Aviation Societe Nationale De Constructions Aeronautiques, Paris, France

Filed Jan. 25, 1968, Ser. No. 700,423
Claims priority, application France, Jan. 27, 1967, 92,877
Int. Cl. G01b *11/26*
U.S. Cl. 356—141 **7 Claims**



A method and a device for measuring the sighting error of an optical apparatus, particularly of a star sight for artificial

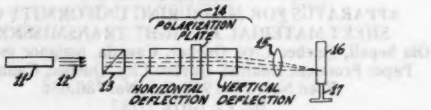
satellites, in which the image of the star, formed on the focal plane of an optical apparatus, is detected by a detecting means associated with a time basis and detecting one signal varying as a function of the illumination of the detector, the said signal having an anomaly or discontinuity characteristic of the position of the image to be fixed, so as to constitute at least one detection signal and lead to one coordinate in a system of references associated with the above detector.

3,572,941

PHOTOCHROMIC DEVICE BASED UPON PHOTON ABSORPTION

Zoltan Kiss, Belle Mead, N.J., assignor to RCA Corporation

Filed Dec. 7, 1967, Ser. No. 688,779
Int. Cl. G02b *1/26, 1/36*
U.S. Cl. 350—150 **10 Claims**



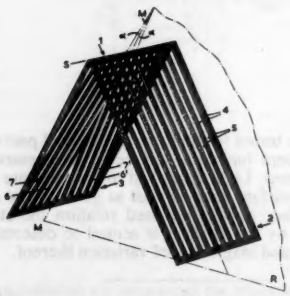
A device capable of displaying and storing three dimensional images comprises a photochromic target and a light source. The light source emits light of a power density and a frequency so as to be substantially transmitted by the photochromic target. The power density and frequency of the emitted light is such that when light is focused at a spot to provide an increased power density at this spot, double photon absorption of the light by the photochromic target occurs and causes a change in the optical density characteristics of the photochromic target in the region of absorption. The device therefor includes means for focusing the light.

3,572,942

POSITION INDICATING INSTRUMENT

Gerrit Hendrik teKronnie, and Karel Hero Volkers, Van Breestraat 171, Amsterdam, Netherlands

Filed Aug. 1, 1968, Ser. No. 749,563
Claims priority, application Netherlands, Aug. 10, 1967, 6,711,045
Int. Cl. G01b *11/27;* **G02b** *5/18*
U.S. Cl. 356—154 **3 Claims**



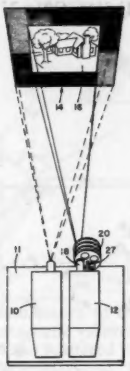
An instrument enabling a distant observer to locate a point in a plane of reference defined by the instrument. It contains two line grid structures spaced apart in planes perpendicular to the reference plane and presenting a symmetrical phantom or moire pattern to a distant observer when in the reference plane. The grid halves of one screen on both sides of the reference plane are slightly angularly displaced with respect to the corresponding halves of the other screen to provide moire bars which are coincident at the centerline as a test for symmetry.

3,572,943

COLOR FILM EVALUATION SYSTEM

Ferrand D. E. Corley, 2 Wimbleton Crescent, Islington, Ontario, Canada

Filed Apr. 22, 1968, Ser. No. 722,867
Int. Cl. G01j *3/46, 3/52*
U.S. Cl. 356—175 **4 Claims**



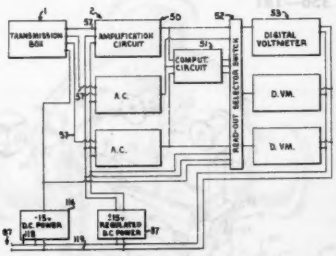
This specification discloses a system for evaluating the color balance density and contrast of color film by means of projecting the color film onto a screen and visually comparing it with a standard reference image on the screen, and to apparatus for such system.

3,572,944

SYSTEM FOR ANALYZING COLOR SAMPLES

John V. Hanline, Kansas City, Mo., and Daniel M. Chapin, Shawnee Mission, Kans., assignors to Film Equipment Manufacturing Co., Kansas City, Mo.

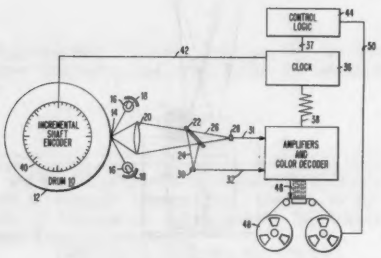
Filed Feb. 24, 1969, Ser. No. 801,308
Int. Cl. G01j *3/46;* **G01n** *21/22;* **G01j** *1/46*
U.S. Cl. 356—177 **7 Claims**



A system for analyzing color samples, such as film and filters, has a light-transmission box and a signal processor wherein a color sample to be analyzed is placed over an aperture through an illuminated translucent window in an upper surface of a transmission box. A lamp is mounted to direct a light beam through a plurality of infrared filters into an entrance of an integration bar having an exit aligned with the aperture through the translucent window thereby directing a diffused light beam through the color sample into a light-collecting member. A plurality of color-sensitive phototubes are each responsive to a chromatically differing component of the light directed through the color sample and are posi-

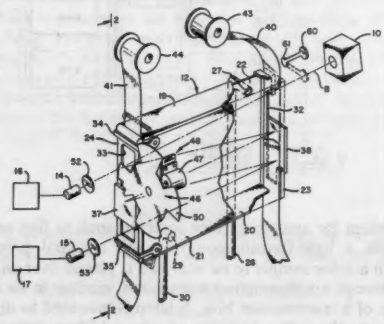
tioned to receive light from the light collecting member. The color-sensitive phototubes are operatively connected to the signal processor wherein computation means analyze the light received by the phototubes and display numerical density values.

3,572,945
METHOD AND SCANNING APPARATUS FOR COLOR SEPARATION AND IDENTIFICATION
Donald R. Thompson, Woodstock, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Sept. 25, 1968, Ser. No. 762,517
Int. Cl. G01j *3/46;* **G01n** *21/02, 21/18*
U.S. Cl. 356—178 **11 Claims**



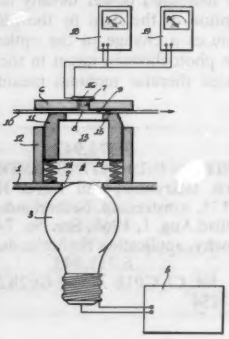
A method and system for scanning color information such as a cartographic map and detecting a possible number of 3^{n-1} colors. The color information is reduced to digital information which may be recorded in a storage device.

3,572,946
FLUID ANALYZER APPARATUS
John C. Little, Menlo Park, Calif., assignor to Sylvania Electric Products Inc.
Filed Feb. 26, 1969, Ser. No. 802,541
Int. Cl. G01j *3/46;* **G01n** *1/10*
U.S. Cl. 356—181 **4 Claims**



A hollow cell with opposed windows is connected in series with conduits through which automobile exhaust gas to be analyzed flows continuously. A broadband infrared source directs a beam through the windows to a first photodetector which measures the absorption of light at one wavelength to which one of the gas components, such as carbon monoxide (CO), is responsive. This beam is alternately directed over a longer path through the cell by a reflective chopper wheel adjacent the exit window and by mirrors mounted outside both windows to another photodetector which measures absorption of light at a different wavelength corresponding to another component, such as a hydrocarbon (HC). The outputs of both photodetectors are utilized to give continuous direct readout of the concentrations of the components. Each window is formed with a length of transparent plastic tape releasably sealed against the cell body and connected to a roll of the tape mounted adjacent to the cell. A clean window is provided by simply advancing a fresh length of tape into the cell and discarding the used portion.

3,572,947
APPARATUS FOR MEASURING UNIFORMITY OF SHEET MATERIAL BY LIGHT TRANSMISSION
Ola Sepall, Quebec City, Quebec, Canada, assignor to Anglo Paper Products, Limited, Quebec City, Quebec, Canada
Filed Nov. 29, 1968, Ser. No. 780,036
Int. Cl. G01n *21/32*
U.S. Cl. 356—200 **5 Claims**

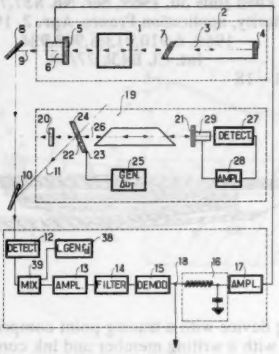


The sheet to be tested for uniformity is moved past a light-transmitting element having a surface in engagement with one side of the sheet. Light is applied to the opposite side of the sheet over a surface area at least as great as the area of the element surface and in opposed relation thereto. The light transmitted by the element is sensed to determine the average intensity and magnitude of variation thereof.

3,572,948
APPARATUS FOR MEASURING THE ELECTRON DENSITY OF A PLASMA
Jean-Michel Catherin, Savigny-Sur-Orge, France, assignor to Compagnie Generale D'Electricite, Paris, France
Filed Oct. 30, 1968, Ser. No. 771,788
Claims priority, application France, Oct. 31, 1967, 126,657
Int. Cl. G01n *21/20;* **H01s** *3/00*
U.S. Cl. 356—204 **3 Claims**

A device for measuring the electron density of a plasma. A first laser beam is slowed by a plasma in an amount depend-

ing upon the electron density. A second laser beam is mixed



with the first to obtain a beat frequency as a function of the electron density.

3,572,949

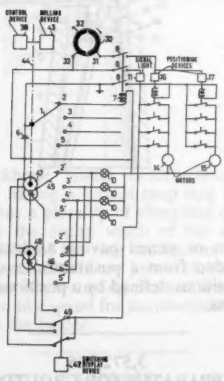
AN INSTALLATION FOR MEASURING THE MAXIMUM VISUAL DISTANCE IN THE FOG INCLUDING A SERIES OF SIGNAL LIGHTS

Paul Rouet, Marcinelle, Belgium, assignor to Ateliers De Constructions Electriques De Charleroi (ACEC), Brussels, Belgium

Continuation-in-part of application Ser. No. 494,537, Oct. 11, 1965, now Patent No. 3,501,239. This application Dec. 13, 1967, Ser. No. 690,344

Int. Cl. G01n *21/22*

U.S. Cl. 356—206 **5 Claims**



An installation for measuring the maximum visual distance in the fog which consists of a series of progressively distant lights, an optical system for projecting few of said lights on a screen, and a control device for simultaneously lighting and focusing the said few lights. Such series of signal lights are arranged in a plurality of approximately parallel rows in such a way that consecutive signal lights are located in different rows to eliminate the disadvantages resulting from the halos encircling the signal lights when such signal lights are projected on the screen. The same results may be obtained by flashing selected signal lights while the others are constantly lit or vice versa.

3,572,950

PROCESS FOR DETERMINING THE MAGNETIC ORIENTATION IN MAGNETIC RECORDING MATERIALS

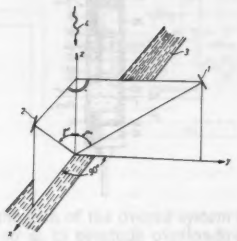
Wilhelm Abeck; Wolfgang Eichler; Richard Menold, Leverkusen, and Bernhard Seidel, Gruenwald, near Munich, Germany, assignors to AGFA-Gervaert Aktiengesellschaft, Leverkusen, Germany

Filed Sept. 12, 1968, Ser. No. 759,435

Claims priority, application Germany, Sept. 21, 1967, A56845

Int. Cl. G01n *21/48*

U.S. Cl. 356—210 **3 Claims**



Process for the measurement of the orientation of magnetizable particles in magnetic recording materials by determining the intensity of the scattered radiation obtained from incident beams of electromagnetic waves at the angle of scatter γ′ as a function of the angle of rotation Φ, whereby the measurement is carried out in such a manner that the plane of scatter is perpendicular to the surface of the recording material, i.e.: the incident light beam, the normal to the surface and the scattered light beam lie in one plane.

3,572,951

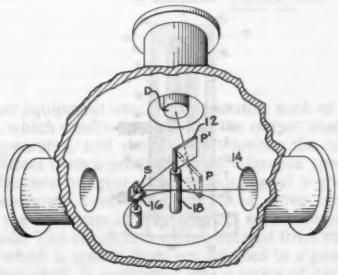
SINGLE MIRROR NORMAL INCIDENCE REFLECTOMETER

Frederick Rothwarf, and Robert Esposito, Philadelphia, Pa., assignors to the United States of America as represented by the Secretary of the Army

Filed Oct. 29, 1968, Ser. No. 771,540

Int. Cl. G01n *21/48*

U.S. Cl. 356—212 **4 Claims**

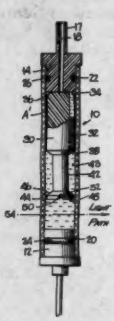


A single beam reflectometer adaptable for use with commercial monochromators and employing a vacuum chamber which houses a mirror pivotable to either one of two positions. In the reference position, the mirror reflects the light beam emanating from the monochromator directly into a phototube detector. In the reflected position, the mirror reflects the beam reflected from the sample to be tested to the detector. The beam reflected from the sample strikes the mirror at the same incident angle and at the same point as the beam does when the mirror is in the reference position and thus falls on the detector at the same point and the same incident angle.

3,572,952
FLOAT CUVETTE

Erik W. Anthon, Kensington, Calif., assignor to American Optical Corporation, Southridge, Mass.

Filed Feb. 20, 1968, Ser. No. 706,812
Int. Cl. G01n 1/10
U.S. Cl. 356—246 3 Claims

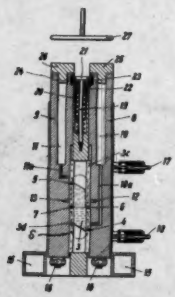


A novel cuvette assembly consisting of the combination of a hollow transparent cuvette element containing a float in which the float is so shaped as to control the path of a fluid sample entering the cuvette and cause it to wash the interior of the cuvette. As the float rises in the cuvette, it carries with it the initial wash portion of the sample preventing mixing with the test portion of the sample entering the cuvette.

3,572,953
APPARATUS FOR DETERMINATION OF DIFFUSION OF A PAIR OF SOLUTIONS INTO EACH OTHER

Hans Beutelspacher, Braunschweig, Germany, assignor to Heraeus-Christ G.m.b.H., Gipsmuhlenweg, Osterode Harz, Germany

Filed Sept. 8, 1969, Ser. No. 855,823
Claims priority, application Germany, Sept. 23, 1968, P 17 98 300.5
Int. Cl. G01n 13/00
U.S. Cl. 356—246 9 Claims



A pair of upright spaced parallel plates are held into a frame, to define a chamber therebetween which is in the shape of an upright parallelogram; inlet means for the heavier, and lighter liquids, respectively, are located at the lowest and highest points of the parallelogram, and a pair of overflow outlets are located in aligned horizontal position along the vertical upright lines of the parallelogram. The entire assembly can be incorporated together with a slide valve and pump combination, to admit the liquids whose diffusion constants are to be determined, to the respective inlets, and to open the outlet passages to a drain. The plates can be surrounded by a holder, for example of metal, formed with a slit to permit optical determination of diffusion.

3,572,954
WRITING DEVICE

Raymond Cheron, Villeneuve Saint-Georges, France, assignor to Le Foyer Et Cie, Paris, France

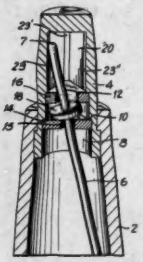
Filed June 30, 1969, Ser. No. 837,792
Claims priority, application France, Apr. 2, 1969, Feb. 18, 1969, 6,910,013;6,903,984
Int. Cl. B43k 27/08
U.S. Cl. 401—18 10 Claims

A writing device with a tracing point comprises detachable head fitted with a writing member and ink conducting means so that when the head is mounted on the writing device ink is fed to said member enabling one to write with the same. The member is a nib or a ball.

3,572,955
WRITING PEN

Gerold Andreka, Hamburg, Germany, assignor to Riepe-Werk, Hamburg, Germany

Filed Dec. 12, 1969, Ser. No. 884,640
Claims priority, application Germany, Dec. 18, 1968, P 18 15 321.4
Int. Cl. B43k 27/14
U.S. Cl. 401—33 8 Claims



A writing pen or pencil having a plurality of refills, a pushrod suspended from a pushbutton and being movable into selected positions defined by a positioning contour, such as a square recess.

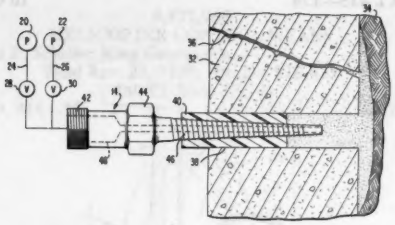
3,572,956
APPARATUS FOR GROUTING

Frank N. Liscum, Dallas, Tex., and Forrest C. Pittman, Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

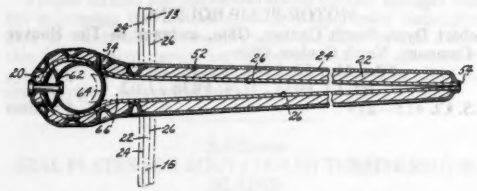
Continuation of application Ser. No. 529,857, Feb. 24, 1966, now abandoned. This application July 30, 1968, Ser. No. 757,178
Int. Cl. B43k 5/02; F16l 41/06
U.S. Cl. 401—188 6 Claims

Apparatus for injecting grouting materials under pressure into a wall structure through a hole. A grouting nozzle is attached by a hose to a pump. A tube of elastic material is inserted in the cylindrical drilled hole in the wall. The nozzle has a tapered shank portion with screw threads that have a long axial face and a short radial face. After the tube is placed in the hole, the nozzle is inserted in the tube and

rotated until the nozzle is secured in the hole. The pump can then be operated to inject fluid under pressure through the nozzle to the interior of the wall structure. The nozzle can be easily removed from the hole unscrewing the nozzle relative to the tube.



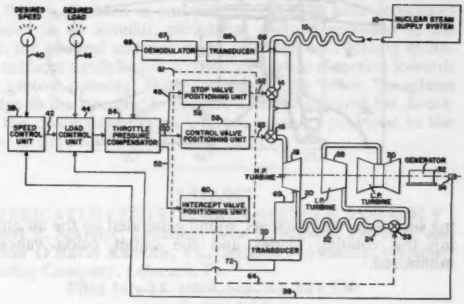
3,572,957
RIBBED-BACKBONE BINDER CONSTRUCTION
Gerson Strassberg, 28-62 208th St., Bayside, N.Y.
Filed Aug. 2, 1968, Ser. No. 749,795
Int. Cl. B42f *3/04*; **B42d** *3/06*
U.S. Cl. 402—75 **1 Claim**



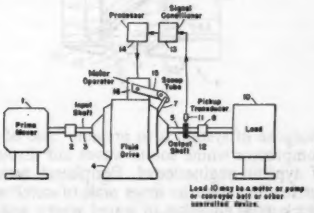
A ribbed-backbone binder construction for use in a looseleaf binder having a typical snap ring mechanism. The board stiffener has a plurality of elongated openings extending substantially the entire width of the stiffener and on either or both sides of the ring mechanism support section. The outer and inner covers are joined through the openings to form a plurality of alternating ribs and hinges, allowing the backbone portion to expand for accommodation of increased capacities within the binder.

3,572,958
ELECTROHYDRAULIC CONTROL WITH THROTTLE PRESSURE COMPENSATOR
Jens Kure-Jensen, Schenectady, N.Y., assignor to General Electric Company
Filed May 27, 1969, Ser. No. 828,287
Int. Cl. F01b *25/00*
U.S. Cl. 415—17 **11 Claims**

An adaptive control system with an electrical throttle pressure compensator is disclosed for adjusting the gain of the control valves of a prime mover in a manner inversely proportional to the instantaneous throttle pressure. In one embodiment a first stage pressure feedback goes into service automatically when the load increases above a certain low level. The feedback operates to further reduce changes in incremental regulation so as to supplement the action of the throttle pressure compensator in reducing the effects of varying throttle pressure. Upon the failure of one or more of the critical components of the throttle pressure compensator or feedback loop, the gain of the overall system is caused to go to a safe value so as to preclude overloading of the prime mover.



3,572,959
COUPLING CONTROLLER
William James Shaughnessy, Brookfield Center, Conn., assignor to American Standard, Inc., New York, N.Y.
Filed May 1, 1969, Ser. No. 821,018
Int. Cl. F01b *25/06*; **F16d** *33/14*; **F15b** *13/16*
U.S. Cl. 415—30 **19 Claims**

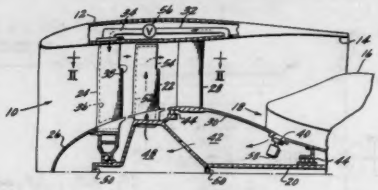


Covers equipment employing a sensor, such as a magnetic pickup, which senses the speed of the output shaft of a fluid drive apparatus, and determines whether the output shaft speed differs from a predetermined reference speed. If there is a difference or error, a correction signal is generated for correspondingly controlling the fluid drive apparatus to reduce the error signal, step by step, to a substantially zero magnitude. The correction signal, derived from the magnetic pickup which is spaced from but coupled to a gear device on the output shaft, is converted into a series of variable width pulses which are employed for the control function.

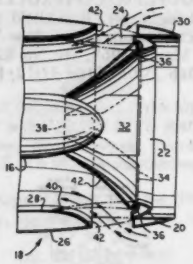
3,572,960
REDUCTION OF SOUND IN GAS TURBINE ENGINES
James W. McBride, Cincinnati, Ohio, assignor to General Electric Company
Filed Jan. 2, 1969, Ser. No. 788,358
Int. Cl. F01d *5/14*, *5/16*; **F04d** *29/66*
U.S. Cl. 415—115 **3 Claims**

The disclosure shows a representative axial flow compressor in the form of a fan employed in reaction type propulsive engines. The inlet guide vanes and the rotor blades of this fan are provided with slots lengthwise of the outer portions of their trailing edges. Pressurized air is discharged from these

slots to minimize circumferential velocity gradients immediately downstream of the vanes and blades. By minimizing such velocity gradients, sound generated by the air entering the rotating blades and the outlet guide vanes is minimized.



3,572,961
COMPRESSOR NOISE-SUPPRESSION SYSTEM
George E. Medawar, San Diego, Calif., assignor to Rohr Corporation, Chula Vista, Calif.
Filed July 9, 1969, Ser. No. 840,402
Int. Cl. F01d *5/10*
U.S. Cl. 415—119 **14 Claims**

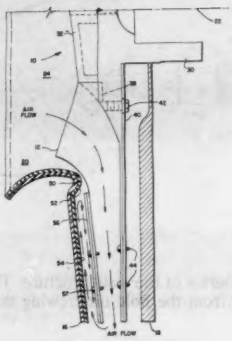


Basic purpose of system is to prevent "line of sight" emission of compressor whine sound waves out through entrance throat of typical engine cowl. Peripheral series of vanes pivoted at leading edge to inner wall of cowl swing toward axis to block axial emission of sound waves and also cut off ingress of air. Peripheral auxiliary air inlet passage means is provided at locus aft of leading edge to allow lateral inflow of air when normal path is blocked. A blocking ring normally overlies inlet passage and moves axially forward to uncover it. Deployment of ring causes deployment of vanes. Sound suppression surfacing is applied to rear faces of vanes and throat of auxiliary inlet passage. Total area of auxiliary passage is approximately equal to area of cowl inlet throat.

3,572,962
STATOR BLADING FOR NOISE REDUCTION IN TURBOMACHINERY
Tony F. W. Embleton, and George J. Thiessen, Ottawa, Canada, assignors to Canadian Patents and Development Limited, Ottawa, Ontario, Canada
Filed June 2, 1969, Ser. No. 829,428
Int. Cl. F01d *5/10, 25/04*
U.S. Cl. 415—119 **5 Claims**

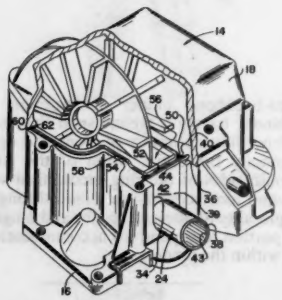
The invention relates to a configuration of stator blading, particularly for the reduction of noise in axial compressors. Each stator blade is comprised of two or three sections, with one of the sections being spaced circumferentially from the other section or sections. Circumferentially, disposed webs connect the sections to one another. The sectional blade divides the sound source at each blade into separate sound sources which are out of phase with one another. Sound waves at different phases interfere destructively so that the total sound output is reduced.

3,572,963
INLET TURNING RING SEAL
John A. Marino, Palmyra, Pa., assignor to Hauck Manufacturing Company, Lebanon, Pa.
Filed July 15, 1969, Ser. No. 841,737
Int. Cl. F04d *29/66*
U.S. Cl. 415—174 **10 Claims**



An improved turning ring seal is provided at the inlet of a turboblower to prevent high pressure fluid from discharging back into the inlet of the impeller. The stationary portion of the seal is provided by an integral curved annular shoulder around the inlet of the casing. The rotating portion of the seal is provided by the inner diameter of the blade shroud.

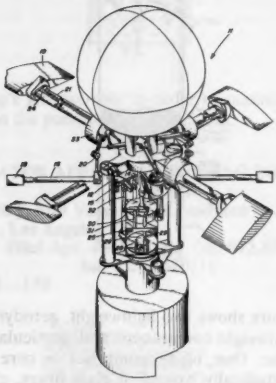
3,572,964
MOTOR-PUMP HOUSING
Robert Dyer, North Canton, Ohio, assignor to The Hoover Company, North Canton, Ohio
Filed May 23, 1969, Ser. No. 827,339
Int. Cl. F01d *25/24;* **F03b** *11/02*
U.S. Cl. 415—219 **4 Claims**



An integral motor-pump for a wet pickup floor conditioner has a housing comprising pump and motor chamber, the housing is divided along a horizontal parting line to form upper and lower housing sections having mating peripheral surfaces for sealing the pump chamber. An outlet port for the pump chamber comprises a U-shaped opening, in the lower housing section, in an outer wall of the pump chamber, extending from the parting line. An insert element has a planar vertical body with a tubular portion extending outwardly therefrom in a general horizontal direction. The marginal edge of the planar body fits in a recess in the opening in the lower housing section while the top edge of the insert element coincides with the parting line of the housing sections. A pump outlet passage extends coaxially through the tubing portion and the planar body of the insert element into the fan

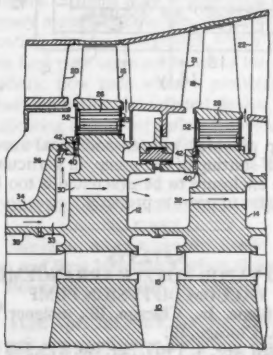
chamber. A flexible outlet hose is mounted on the tubing portion. The outlet port is fabricated in this fashion so that reasonably inexpensive molds may be used to fabricate the upper and lower housing sections of the motor-pump housing as unitary members.

3,572,965
HELICOPTER CONTROL MEANS
Harold R. Scheibe, King George, Va.
Filed Apr. 23, 1969, Ser. No. 818,625
Int. Cl. B64c *27/74*
U.S. Cl. 416—18 **8 Claims**



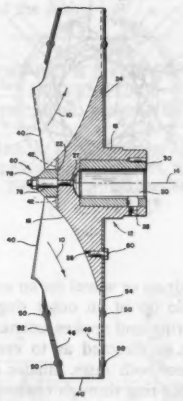
Torque motors are interposed in the control linkages used for processing the control gyro of a rigid rotor helicopter. Due to the inherent characteristics of a DC torque motor, this arrangement damps unwanted nutations of the control gyro while at the same time allowing accurate control of the processing of the control gyro.

3,572,966
SEAL PLATES FOR ROOT COOLED TURBINE ROTOR BLADES
James H. Borden, Springfield, and Augustine J. Scalzo, Philadelphia, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Jan. 17, 1969, Ser. No. 791,892
Int. Cl. F01d *5/08*
U.S. Cl. 416—95 **10 Claims**



The invention comprises a structure for cooling the root portions of turbine rotor blades of the side entry type. The root portions are preferably of the serrated or fir-tree type and are received in complementary serrated recesses provided in the periphery of a rotor disc, the recesses extending axially through the disc. The root portions and recesses are formed to mate with each other, but provide clearance passages along the sides of the root which extend from the upstream face thereof to the downstream face thereof. Cooling fluid is directed to and past the roots by plate structures secured in an annular, peripheral channel provided in the disc, the channel and disc being provided with mating inclining surfaces extending in a radially outward direction towards the groove opening. With rotation of the rotor, the plates wedge in the opening to provide a sealed channel for directing the cooling fluid from internal passages provided in the rotor to the root portions of the blades.

3,572,967
FABRICATED CENTRIFUGAL IMPELLER ASSEMBLY
Robert E. Schreter, Lebanon; John A. Marino, Palmyra, and John O'Hara, Annville, Pa., assignors to Hauck Manufacturing Company, Lebanon, Pa.
Filed July 15, 1969, Ser. No. 841,736
Int. Cl. F01d *5/04*
U.S. Cl. 416—185 **10 Claims**

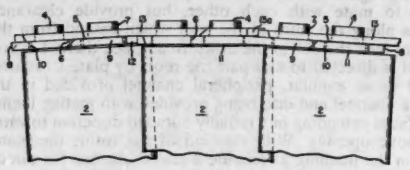


A fabricated centrifugal impeller assembly is provided which resists failure due to cyclic stressing. The impeller assembly includes a hub, and a plurality of blades. Each blade has a tab adjacent its axis of rotation, with the tab extending generally perpendicularly to the radially extending main portion of the blade. A blade retainer is positioned with its back surface adjacent the hub to clamp the tabs between the blade retainer and the hub. The blade retainer includes a plurality of slots that permit insertion of a blade therethrough with the tab of each blade extending in generally abutting contact with the back surface of the blade retainer. Compression means connect the blade retainer and the hub and exert a compressive force that clamps the blade retainer and the tabs against the hub. The tabs and blade retainer permit attaching separate fabricated blades to the hub of an impeller assembly in a manner which does not disrupt the flow contours of the impeller inlet area.

3,572,968
TURBINE BUCKET COVER
Victor S. Musick, Scotia, and Joseph H. Ouellette, Albany, N.Y., assignors to General Electric Company
Filed Apr. 11, 1969, Ser. No. 815,450
Int. Cl. F01d *5/22*
U.S. Cl. 416—190 **7 Claims**

A damping-type shroud covering for turbine buckets wherein one embodiment consists of a double layer of overlapping cover bands each spanning two adjacent buckets. The inner bands are loosely disposed between buckets

whereas the outer layer rigidly joins two buckets. Another embodiment consists of an over and under cover band



wherein each cover band is tightly joined to one bucket and loosely joined to the adjacent one.

3,572,969

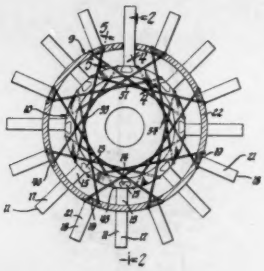
TURBOMACHINE ROTOR

Henry S. McLimore, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed May 13, 1969, Ser. No. 824,077

Int. Cl. F04d *29/26;* F04f *5/00*

U.S. Cl. 416—194 **8 Claims**



A bladed rotor drum or wheel for an axial flow compressor or turbine is made up of an outer ring and an inner ring within the outer ring and spokes connecting the two rings, the spokes being so directed as to exert an inward component of force on both rings. Blades extend into the gas path from the inner ring through openings in the outer ring. Preferably, blades are also mounted on the outer ring. End bells or discs may be provided on one or the other or both of the rings.

3,572,970

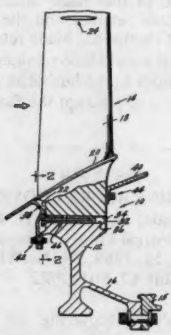
TURBOMACHINERY BLADE SPACER

Robert J. Smuland, Cincinnati, Ohio, assignor to General Electric Company

Filed Jan. 23, 1969, Ser. No. 793,322

Int. Cl. F01d *5/32*

U.S. Cl. 416—221 **5 Claims**



A blade spacer having a shank portion formed of a resilient, low-set, nonmetallic material and adapted for insertion beneath a turbomachinery blade so as to maintain the blade in tight radial abutment with its disc slot.

3,572,971

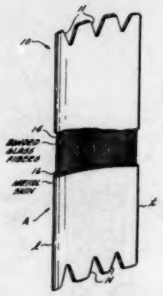
LIGHTWEIGHT TURBO-MACHINERY BLADING

David L. Seiwert, West Chester, Ohio, assignor to General Electric Company

Continuation-in-part of application Ser. No. 666,373, Sept. 8, 1967, now abandoned. This application Sept. 29, 1969, Ser. No. 861,975

Int. Cl. F01d *5/14*

U.S. Cl. 416—230 **6 Claims**



The disclosure shows two lightweight, aerodynamic blades for use in lightweight compressors and, particularly, as stator vanes therefor. One blade comprises a core formed by bonded, longitudinally extending glass fibers, clad within a metallic skin bonded thereto. The other blade comprises a core of longitudinally extending, bonded graphite fibers, clad within a titanium skin of a selected thickness bonded thereto.

3,572,972

SELF-STARTER DEVICE FOR PENNING-TYPE ION PUMPS

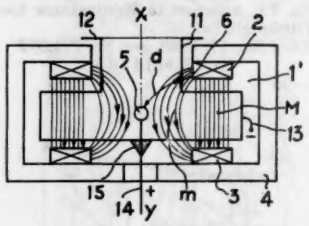
Charles Biguenet, and Jean Pontvianne, Paris, France, assignors to Thomson-CSF

Filed Apr. 2, 1969, Ser. No. 812,620

Claims priority, application France, Apr. 11, 1968, 147,816

Int. Cl. F04b *37/02*

U.S. Cl. 417—49 **7 Claims**



An ion pump provided with an additional anode which is used for the self-starting of the pump, in particular when the pressure in the enclosure to be evacuated is too high for the penning electrodes to operate properly.

3,572,973

HEATER AND VAPOR NOZZLE ARRANGEMENT FOR A VACUUM DIFFUSION PUMP

Joseph A. Le Blanc, Jr., Chicago, Ill., assignor to Precision Scientific Co., Chicago, Ill.

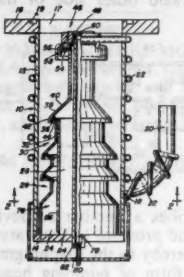
Filed Apr. 4, 1969, Ser. No. 813,565

Int. Cl. F04f *9/00, 9/04*

U.S. Cl. 417—154 **10 Claims**

An improved vacuum diffusion pump includes a pair of heated caps provided adjacent the pump inlet and forming portions of two vapor jets, or nozzles each of which is designed to minimize the migration of vapor molecules issu-

ing therefrom, toward the pump inlet. An improved diffusion pump also includes a heating element provided in the interior

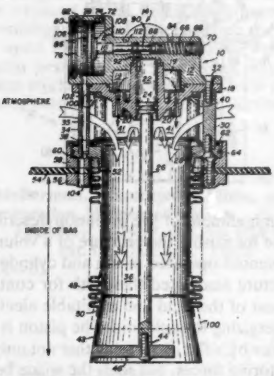


of the pump's jet assembly in order to minimize vapor condensation on the pump assembly.

3,572,974
ASPIRATOR APPARATUS FOR BAG INFLATION SYSTEMS

Ronald H. Day, Mill Valley, Calif., assignor to Sargent Industries, Inc., Los Angeles, Calif.

Filed Apr. 4, 1969, Ser. No. 813,660
Int. Cl. F04f *5/16*
U.S. Cl. 417—179 **13 Claims**



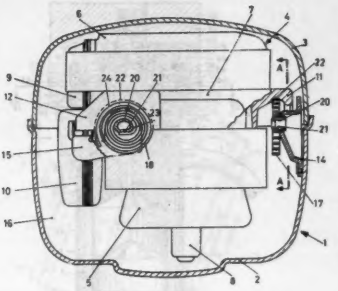
An improved aspirator device for bag inflation systems and the like, which is rotationally symmetric about the axis of the device and includes an annular atmospheric flow path concentric with one or more rings of aspirating jets to provide a high efficiency aspirating function. The aspirator includes a single operation closure component which acts to open the atmospheric flow path upon actuation of the device and close the atmospheric flow path when a predetermined pressure has been built up within the inflated device. Means are provided for allowing a selected inflated device pressure to initiate closure of the atmospheric flow path.

3,572,975
MOTOR COMPRESSOR RESILIENTLY SUSPENDED IN A CASE

Knud V. Valbjorn, Augustenborg; Bendt Wegge Romer, Nordborg, and Bent Melchior Karlsen Holme, Humbaek Pr. Skovby, Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed Apr. 28, 1969, Ser. No. 819,699
Claims priority, application Germany, Apr. 27, 1968, P 17 51 259.3
Int. Cl. F04b *39/00*
U.S. Cl. 417—363 **8 Claims**

The invention relates to a motor compressor assembly of the type used for small refrigeration machines. The assembly has an outer casing in which a motor compressor unit is suspended by springs. The springs are of the spirally wound

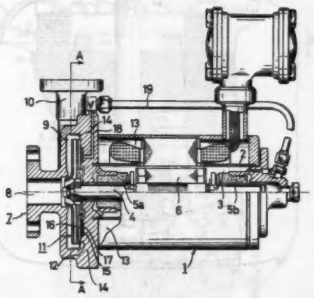


type and are disposed, in vertical planes, between the motor compressor unit and the casing.

3,572,976
FLUID TAKEOFF DEVICE FOR CANNED MOTOR DRIVEN PUMP

Ryuichi Sato, Tokyo, Japan, assignor to Nikkiso Co., Ltd., Tokyo, Japan

Filed Oct. 1, 1968, Ser. No. 764,242
Claims priority, application Japan, Oct. 9, 1967, 42/64,837
Int. Cl. F04d *13/02*; **H02k** *9/00, 5/16*
U.S. Cl. 417—369 **2 Claims**



A fluid takeoff device for canned motor driven pump in which a part of the circulation fluid for cooling and lubricating motor rotors and bearings is led through the back wall of the pump impeller chamber so that a flow rate of the circulation fluid is always stabilized without being influenced by the variation in a discharge rate of the pump.

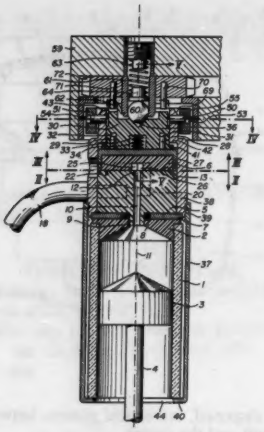
3,572,977
DISTRIBUTOR PUMP

Manuel Sanz, Grand-Lancy, and Rene Weber, Geneva, Switzerland, assignors to Micromedic Systems, Inc., Philadelphia, Pa.

Filed Aug. 11, 1969, Ser. No. 849,078
Claims priority, application Switzerland, Aug. 16, 1968, 12,399/68
Int. Cl. F04b *19/22, 7/00*
U.S. Cl. 417—360 **5 Claims**

To permit easy dismantling and replacement, a distributor pump comprises a piston syringe, a distribution valve having

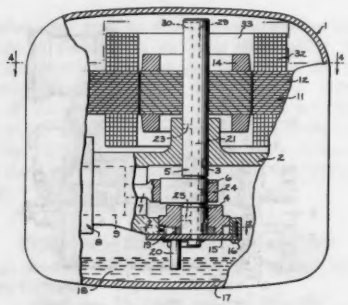
a rotary frontal valve element, and a driving member for said element, all arranged in series along a common axis coinciding with the axis of movement of the piston and constituting the axis of rotation of the valve element.



3,572,978
HERMETIC COMPRESSOR HAVING LUBRICANT-COOLING MEANS

Owen H. Scheldorf, Louisville, Ky., assignor to General Electric Company

Filed July 14, 1969, Ser. No. 841,214
Int. Cl. F04c 29/02
U.S. Cl. 417—372 3 Claims



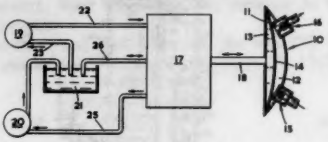
A hermetic compressor comprising a casing containing a motor compressor unit in which the motor is above the compressor and connected thereto by a vertical drive shaft, includes a longitudinally extending lubricant passage in the shaft connected to a transversely extending passage at the upper end of the shaft and a pump for providing a pulsating flow of lubricant through the longitudinal and transverse passages. The transverse passage is oriented relative to the motor so as to discharge a stream of lubricant over the top of the motor and onto the casing during period of maximum flow of lubricant and onto the motor when the lubricant flow is less than maximum.

3,572,979
PUMPS

Paul Greville Morton, c/o The English Electric Company Ltd., Stafford, England

Filed Mar. 24, 1969, Ser. No. 809,681
Claims priority, application Great Britain, Mar. 22, 1968, 14005/68
Int. Cl. F04b 9/08, 17/00, 35/00
U.S. Cl. 417—390 5 Claims

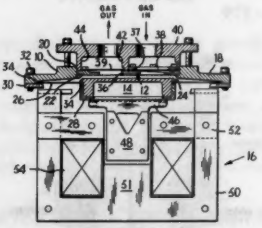
In a blood pump a fluid pressure circuit is provided which is operative to feed a variable frequency pulsating flow of water to one side of a flexible diaphragm. The other side of the flexible diaphragm is connected into a patient's bloodstream and thus flexure of the diaphragm results in a pulsatile flow of blood on said other side of the diaphragm. The specification describes a number of devices for alternately applying suction and pressure to the water in said fluid pressure circuit and thereby to the diaphragm as well as describing one practical form of pumping head including such a diaphragm.



3,572,980
RESONANT PUMP USING FLAT DISK SPRINGS

Joseph S. Hollyday, West Hurley, N.Y., assignor to Rotron Incorporated, Woodstock, N.Y.

Filed Feb. 17, 1969, Ser. No. 799,577
Int. Cl. F04b 17/04
U.S. Cl. 417—413 12 Claims

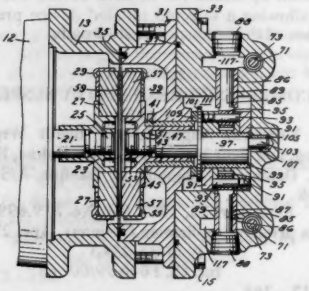


A preferred embodiment of the invention described herein provides a device for raising the pressure of a volume of fluid comprising, a solenoid-operated piston and cylinder unit having a valve structure associated therewith for controlling the intake and exhaust of the fluid and a suitable electrical energy source for energizing the solenoid. The piston is supported within the cylinder by a flat disk spring that not only provides the required restoring forces, but seals the space between the piston and cylinder and effectively enlarges the working area of the piston.

3,572,981
HERMETICALLY SEALED PUMP

Vernon W. Pearson, and Kenneth L. Hagemeyer, Rockford, Ill., assignors to Greenlee Bros & Company, Rockford, Ill.

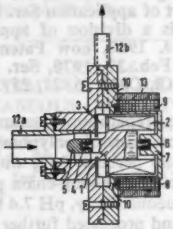
Filed July 1, 1969, Ser. No. 838,115
Int. Cl. F04b 17/00; H02k 5/10
U.S. Cl. 417—415 1 Claim



A hermetically sealed pump having a pair of rotatable magnetic discs, separated by a nonmagnetic member; one

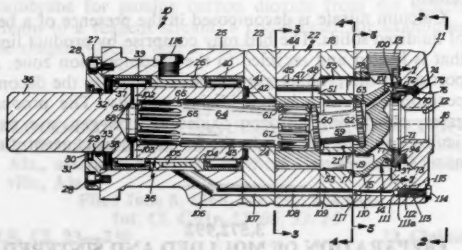
magnetic disc being permanently affixed to a drive shaft of a motor, and the other magnetic disc being affixed to a fluid pumping means.

3,572,982
PUMP WITH GAP-TUBE MOTOR
Friedrich Kozdon, Erlangen-Buckenhof, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed Feb. 24, 1969, Ser. No. 801,326
Claims priority, application Germany, Mar. 2, 1968, P 16 38 272.2
Int. Cl. F04d *13/02*; **H02k** *5/10*; **H02p** *5/20*
U.S. Cl. 417—423 **5 Claims**



A brushless DC motor having permanent magnets is coaxially joined with a pump rotor within a tubular housing portion of nonmagnetic material. The rotor and the bearings thereof are exposed to the liquid being pumped. The motor has field windings mounted externally on the tubular portion for action upon the permanent magnets. Sensors responsive to the angular position of the permanent magnets control the commutation of the field windings and are mounted on the pump housing externally of the tubular portion.

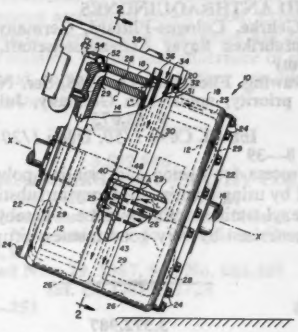
3,572,983
FLUID-OPERATED MOTOR
Hugh L. McDermott, Minneapolis, Minn., assignor to Germane Corporation, Minneapolis, Minn.
Filed Nov. 7, 1969, Ser. No. 874,757
Int. Cl. F01c *1/02*, *19/08*
U.S. Cl. 418—61 **8 Claims**



A fluid-operated motor of the radial valve type, the motor having a hydraulically balanced and actuated valve-seating mechanism equally responsive to reversed motor-operating fluid flow and a positive circulation lubrication system providing controlled lubrication at all wear points during operation of the motor.

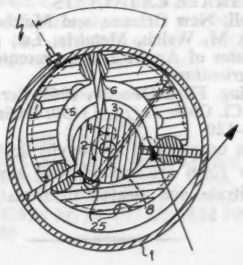
3,572,984
LIQUID-COOLING SYSTEM FOR ROTARY-PISTON MECHANISMS
Charles Jones, Hillsdale, N.J., assignor to Curtiss-Wright Corporation
Filed Sept. 3, 1969, Ser. No. 854,967
Int. Cl. F01c *21/06*; **F01p** *3/00*
U.S. Cl. 418—83 **19 Claims**

In a liquid-cooling system for rotary-piston type mechanisms comprising a plurality of series-connected passes in areas of which the cooling liquid is capable of defining with the walls of the cooling system passageways a fluidtight chamber where entrapment of air and/or vapor can occur, the provision of passageway means disposed to communicate



each of the fluidtight chambers with other portions of the liquid-cooling flow path in which cooling liquid is free flowing and of lesser pressure to thereby vent the fluidtight chamber areas and prevent air and/or vapor entrapment.

3,572,985
ROTARY PISTON MACHINE
Franz-Joachim Runge, Friesenstrasse 38, 29 Oldenburg, Germany
Filed Mar. 18, 1969, Ser. No. 808,144
Claims priority, application Germany, Mar. 19, 1968, P 16 01 832.9
Int. Cl. F01c *19/00*, *11/00*
U.S. Cl. 418—138 **5 Claims**



A rotary piston machine which serves as the drive for fuel carburetor motors, or as a functional element for a motor, in a steam engine, as a compressor and pump. The machine is constructed in a hollow cylindrically-shaped housing and includes an axially hinged winged-shaped piston pivoted on a first axis and having at least two extending arms for sliding contact against the internal walls of the housing, a plurality of cylindrically-shaped rotary piston segments equal in number to the rotor arms and having perforated ends, and coupling joints slidably disposed on the extending wing-shaped piston arms. The sprockets are pivotably coupled within the perforated ends of the rim segments to the wing-shaped piston arms to close the segments around the hinged wing-shaped piston to form a second axis displaced parallel with respect to the first axis.

3,572,986

PROCESS FOR THE DYEING AND PRINTING OF POLYAMIDE FIBERS USING CYCLOHEXYL AMINO ANTHRAQUINONES

Gunter Gehrke, Cologne-Flittard, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed July 18, 1968, Ser. No. 745,716
Claims priority, application Germany, July 27, 1967, F 53,073
Int. Cl. C09d *1/50*; D06p *1/20*
U.S. Cl. 8—39 2 Claims

The process for dyeing and printing polyamides characterized by using 1-amino-2-alkoxy or substituted alkoxy-4-cyclohexyl amino anthraquinone whereby the dyeings are characterized by very good fastness properties.

3,572,987

PROCESS FOR BLEACHING UNBLEACHED CELLULOSE

Hubert Grunow, Bagneux, France, assignor to Entreprise Miniere et Chimique (formerly Office National Industriel de l'Azote), Toulouse, France

No Drawing. Filed May 23, 1968, Ser. No. 731,640
Claims priority, application France, May 24, 1967, 107,544
Int. Cl. D06l *3/06*
U.S. Cl. 8—101 9 Claims

Unbleached cellulose is bleached to a good degree of whiteness with low degradation and with removal of any size or cotton husk present, by a continuous process involving successive contact with (1) amylase, (2) a compound such as trichloroisocyanuric acid containing a nitrogen-chlorine linkage, and (3) an oxidative bleaching agent.

3,572,988

FABRICS OF CROSSLINKED CELLULOSE ACRYLATES AND METHACRYLATES CROSSLINKED WITH NITRATE CATALYSTS

Gene Sumrell, New Orleans, and Matthew F. Margavio and Clark M. Welch, Metairie, La., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Filed Dec. 30, 1969, Ser. No. 889,322
Int. Cl. C08b *11/12, 13/00*; D06m *13/10*
U.S. Cl. 8—120 8 Claims

Alpha,beta unsaturated carboxylic acid esters of cellulose in fiber form are treated with zinc, aluminum or cadmium nitrate and heated to form cellulose crosslinkages.

3,572,989

PROCESS FOR PRODUCTION OF CALCIUM HYPOCHLORITE

Seiji Tatara, Tokyo, and Toshio Mizukami, Makoto Nishonomiya and Shotaro Kiga, Niigata-ken, Japan, assignors to Nippon Soda Company Limited, Tokyo, Japan

No Drawing. Filed Apr. 7, 1969, Ser. No. 814,208
Int. Cl. C01b *3/04, 3/06*
U.S. Cl. 23—86 5 Claims

A solution saturated with calcium hypochlorite and sodium chloride is added into an aqueous solution of sodium hydroxide and the mixed aqueous solution is chlorinated by chlorine gas. After chlorination of the solution, sodium chloride crystallized in the solution is separated, and then, calcium hydroxide is added into the reaction solution, the reaction solution is chlorinated and crystalline calcium hypochlorite is separated from the mother liquor and the mother liquor is used repeatedly for a diluent of initial reaction.

3,572,990

AMMONIUM POLYPHOSPHATE PRODUCED AT ATMOSPHERIC PRESSURE

Thad D. Farr, Sheffield, and Henry K. Walters, Jr., Florence, Ala., assignors to Tennessee Valley Authority

Continuation-in-part of application Ser. No. 765,744, Oct. 2, 1968, which is a division of application Ser. No. 663,171, Aug. 24, 1967, now Patent No. 3,484,192. This application Feb. 27, 1970, Ser. No. 15,249
Int. Cl. C01b *25/28, 25/38*
U.S. Cl. 23—107 1 Claim

A process for the preparation of ammonium polyphosphate by the ammoniation of polyphosphoric acids containing more than 80 percent P_2O_5 with concurrent hydrolysis of the objectionable long-chain phosphate species. An intermediate aqueous slurry, pH 7.4 to 8.9, is prepared at 50° to 110° C. and processed further to produce granular solids, with good physical properties, that contain in approximately equal proportions ammonium ortho-, pyro-, and tripolyphosphates.

3,572,991

DECOMPOSITION OF CALCIUM NITRATE

Joseph W. Markey, College Park, Ga., assignor to Cities Service Company, New York, N.Y.

Continuation-in-part of application Ser. No. 705,993, Feb. 16, 1968. This application Apr. 1, 1968, Ser. No. 717,886
Int. Cl. C01b *2/42*
U.S. Cl. 23—158 7 Claims

By decomposing calcium nitrate in the presence of a nitrogen oxide-containing atmosphere, a product gas stream containing a high proportion of nitrogen and a relatively low proportion of undesired inerts may be obtained.

Calcium nitrate is decomposed in the presence of a bed of fluidized solids. The bed may comprise by-product lime that is heated and recycled to the decomposition zone. A portion of the product gas may be recycled to the decomposition zone at a bed fluidizing velocity. The product gases, comprising nitrogen oxides and oxygen, are particularly suitable for use in the formation of concentrated nitric acid.

3,572,992

PREPARATION OF MOULDED AND SINTERED ALUMINUM NITRIDE

Katsutoshi Komeya, Kawasaki-shi, and Hiroshi Inoue, Kawaguchi-shi, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

No Drawing. Filed July 1, 1968, Ser. No. 741,321
Claims priority, application Japan, July 5, 1967, 42/42,837; Sept. 11, 1967, 42/58,243; Feb. 29, 1968, 43/12,524
Int. Cl. C01b *21/06*
U.S. Cl. 23—192 7 Claims

A method of manufacturing a moulded and sintered mass of aluminum nitride comprising moulding an admixture of aluminum nitride powder, aluminum oxide powder and metallic aluminum powder, nitriding the moulded mass in nitrogen or ammonia gas at a temperature below the melting point of metallic aluminum, and sintering the mass in nitrogen or inert gas at temperatures ranging from 1,600 to 2,200° C.

3,572,993

ULTRAFINE, NONPYROPHORIC, CHI-IRON CARBIDE HAVING HIGH COERCIVITY

Donald Burl Rogers, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed July 23, 1968, Ser. No. 746,801
Int. Cl. C01b *31/30*
U.S. Cl. 23—208 9 Claims

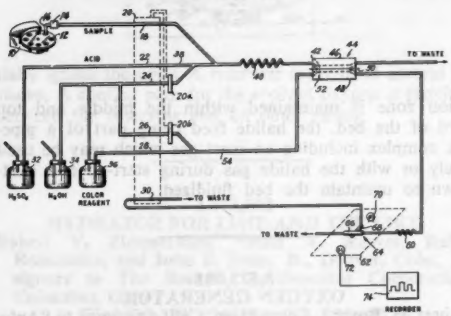
Ultrafine, nonpyrophoric, ferromagnetic chi-iron carbide having high intrinsic coercivity is prepared by heating iron carbonyl in carbon monoxide or a mixture of carbon monoxide and hydrogen at a temperature of 280 to 340° C. This chi-iron carbide is useful as a component of inks, toners, and magnetic recording members for magnetic recording and the like.

3,572,994

ANALYSIS SYSTEM FOR A LIQUID STREAM FOR A GASEOUS CONSTITUENT

Harry Hochstrasser, Hastings-on-Hudson, N.Y., assignor to Technicon Corporation, Ardsley, N.Y.

Filed Feb. 27, 1968, Ser. No. 708,699
Int. Cl. G01n *21/12*
U.S. Cl. 23—230 9 Claims



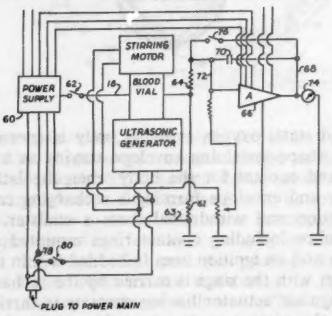
A system for the analysis of a stream of liquid samples for carbon dioxide content includes a sampler, proportioning pump, a gas-permeable and liquid-impermeable membrane for passing carbon dioxide from the sample stream to a reagent stream, a colorimeter for examining the reagent stream and a recorder.

3,572,995

BLOOD-OXYGEN MEASUREMENT AND METER

Billy Otis Martin and Robert Cherry Martin, Huntsville, Ala., assignors to Royal Medical Corporation, Huntsville, Ala.

Filed June 5, 1968, Ser. No. 734,811
Int. Cl. G01n *27/06, 33/16*
U.S. Cl. 23—230 12 Claims



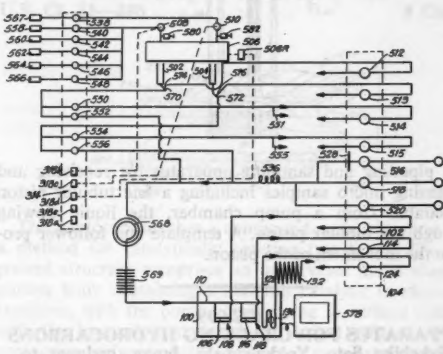
Apparatus and method for electrically and quickly measuring and indicating the amout of oxygen in blood. Through this process the ionized oxygen is converted to oxygen atoms in a blood-sample solution. The total value of the gradually reducing flow of these ions is determined in a circuit by current division, amplification, and summation in a capacitor. The final result is quickly seen on an indicator, calibrated to read in volume units of oxygen in a predetermined amount of tested blood. Economically disposable, quickly replaceable electrodes are positioned in the ionized solution. To prevent adherence of efficiency-destroying blood particles on them they are vibrated by an ultrasonic generator.

3,572,996

ANALYTICAL CHROMATOGRAPHY COLUMN MONITORING SYSTEM

Allen S. Reichler, Pearl River, N.Y., and Nelson G. Kling, Ringwood, N.J., assignors to Technicon Corporation, Ardsley, N.Y.

Filed Nov. 29, 1967, Ser. No. 686,459
Int. Cl. G01n *21/28*
U.S. Cl. 23—253 8 Claims



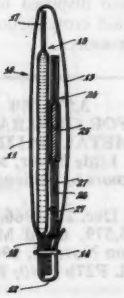
A chromatography apparatus for the sequential automatic loading and analysis of a plurality of samples includes a high pressure, non-return, relief valve in the high pressure portion of the system, and a bubble detector in the colorimeter, for detecting system malfunctions and providing a signal in response thereto.

3,572,997

SOIL TESTING KIT

Robert E. Burk, Milford, Conn., assignor to Burk Industries, Inc., Milford, Conn.

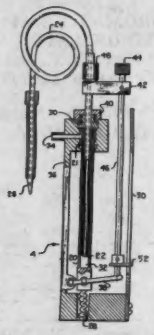
Filed May 24, 1968, Ser. No. 731,770
Int. Cl. G01n *33/24, 31/22*; B65d *79/00*
U.S. Cl. 23—253 6 Claims



A soil testing kit in which an envelope containing water together with an envelope containing a test paper are

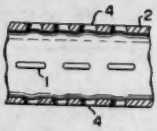
packaged in the bottom fold of a matchbook type package. The water-containing envelope is stiffened through heat sealing so that it may be supported vertically to act as a mixing container.

3,572,998
LIQUID SAMPLING AND PIPETTING APPARATUS
Erik W. Anthon, 534 Kenyon Ave., Kensington, Calif. 94708
Filed May 12, 1969, Ser. No. 823,697
Int. Cl. B01l 3/02
U.S. Cl. 23—259 **5 Claims**



A pipetting and sampling apparatus for receiving and dispensing micro samples including a fine tubular piston extendable from a pump chamber, the liquid flowing through the tubular piston. A template and follower program the movement of the piston.

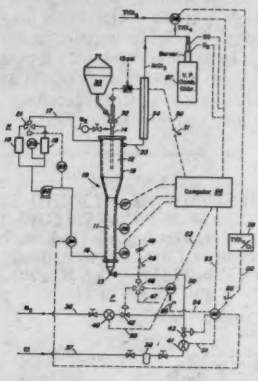
3,572,999
APPARATUS FOR CRACKING HYDROCARBONS
Takehiko Sato, Yokkaichi-shi, Japan, assignor to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan
Filed Apr. 10, 1968, Ser. No. 720,301
Claims priority, application Japan, Apr. 24, 1967, 42/25,935
Int. Cl. F28f 1/02; B01j 1/00
U.S. Cl. 23—277 **4 Claims**



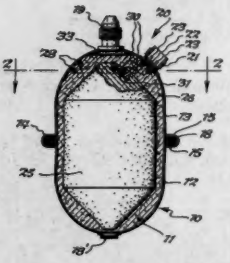
An external heating type thermal cracking apparatus for thermally cracking hydrocarbons comprising thermal cracking tubes having flattened or compressed round cross-sectional configuration disposed in such a manner that the maior axes of said cross-sectional configurations are confronting the heat source.

3,573,000
APPARATUS FOR GENERATING GASEOUS METAL HALIDES
Robert D. Toomey, Little Silver, and George Vassil, Old Bridge, N.J., assignors to National Lead Company, New York, N.Y.
Original application Dec. 23, 1966, Ser. No. 604,389, now Patent No. 3,446,579, dated May 27, 1969. Divided and this application Nov. 25, 1968, Ser. No. 797,298
Int. Cl. F27b 9/40; B01j 9/06
U.S. Cl. 23—277 **4 Claims**

A generator for producing a gaseous metal halide wherein a pulverulent metal is reacted with a gaseous halide in a fluidized-bed of inert material the feed rate of the pulverulent metal to the generator being regulated through the instrumentality of temperature measuring probes, located at strategic places in the generator bed, and a computer which maintains constant surveillance of the temperature profile in the bed, so that the reaction zone is maintained within the middle and top third of the bed, the halide feed being part of a pipeline complex including an inert gas which may be used solely or with the halide gas during start-up and shutdown to maintain the bed fluidized.

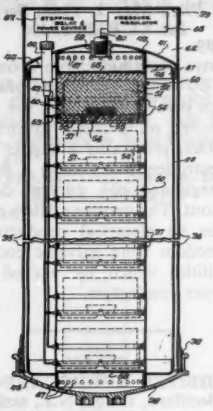


3,573,001
OXYGEN GENERATOR
Robert M. Bovard, Costa Mesa, Calif., assignor to "Automatic" Sprinkler Corporation of America, Cleveland, Ohio
Filed Apr. 3, 1967, Ser. No. 628,131
Int. Cl. B01j 7/00; C01b 13/00
U.S. Cl. 23—281 **8 Claims**



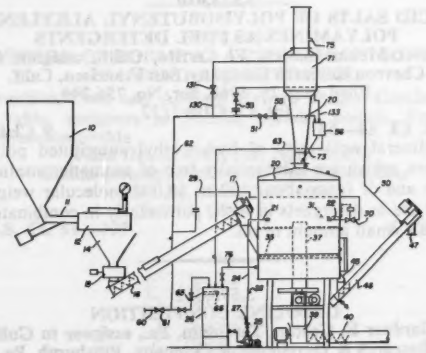
A solid state, oxygen evolving body is encased within a stable, shape-sustaining envelope serving as a filter, insulator and coolant for the body when the latter burns, the body and envelope forming a recharging candle unit for insertion and withdrawal from a canister. An electrical ignitor including contact rings mounted about the envelope and an ignition area imbedded within the candle in contact with the rings is carried by the recharging unit and an ignitor actuator having contacts is carried by the canister, the contacts and contact rings contacting one another in all angular positions of the rechargeable unit relative to the canister. In a modification, the rechargeable

units are stacked in a sleeve having contacts spaced therealong and engaging the contacts of the individual units. A pressure regulator controls a stepping relay which sequen-



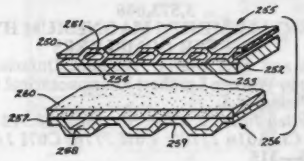
tially ignites the units. A reservoir is provided around the sleeve. A cooling path for the evolved oxygen is provided between the reservoir and an outer casing.

3,573,002
HYDRATOR FOR LIME AND THE LIKE
Robert V. Zimmerman, Adam A. Reeves, Ralph Rossomme, and John B. Jones, Jr., Denver, Colo., assignors to The Battelle Development Corporation, Columbus, Ohio
Filed Feb. 12, 1968, Ser. No. 704,683
Int. Cl. C04b *1/08*
U.S. Cl. 23—287 **11 Claims**



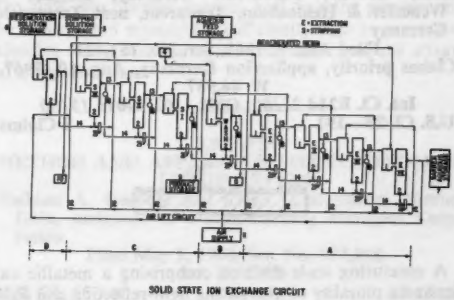
A continuous reactor, for example, for hydrating quicklime or other hygroscopic materials, has at least two superimposed stages with feed and liquid introduced into the top stage where a fluidized bed may be created by the reaction of the material with water producing carrier steam. A portion of the feed material may be completely reacted in the upper stage and the produot discharged therefrom; larger particles are transferred to the lower stage for a longer treatment with water. The reactor includes a standpipe from the upper stage for product, either powdered or liquid, and the method of lime hydration involves adding about two parts of water for each part required for complete hydration so as to produce sufficient steam to fluidize a portion of the bed in the upper stage for effective discharge of finished dry hydrated lime. Each stage is continuously mixed, and each stage has a continuous feed and discharge.

3,573,003
COMPOUND METAL STRUCTURE
Emery I. Valyi, Riverdale, N.Y., assignor to Olin Corporation
Continuation of application Ser. No. 606,751, Jan. 3, 1967, which is a continuation-in-part of application Ser. No. 464,894, May 14, 1965, which is a division of application Ser. No. 398,128, Sept. 21, 1964, now Patent No. 3,289,750, dated Dec. 6, 1966, which is a division of application Ser. No. 202,612, June 14, 1962, now Patent No. 3,201,858, dated Aug. 24, 1965, which is a continuation-in-part of application Ser. No. 732,663, May 2, 1958, now Patent No. 3,049,795, dated Aug. 21, 1962, which in turn is a continuation-in-part of application Ser. No. 586,259, May 21, 1956. This application Nov. 7, 1969, Ser. No. 871,580
Int. Cl. B01j *9/04;* **B22f** *3/10, 7/04*
U.S. Cl. 23—288 **5 Claims**



The disclosure teaches a compound metal structure and a method for catalytically reacting two fluids. The improved structure comprises an impervious metal sheet, a porous body containing a material catalytic to chemical reactions, with the porous body being in surface contact with the impervious metal sheet. A first portion of the contacting surfaces of the impervious metal sheet and the porous body are bonded to each other. The compound metal structure further comprises conduit means defined by a portion of the impervious metal sheet.

3,573,004
COUNTERCURRENT LIQUID-SOLIDS CONTACT PROCESS
Irving M. Abrams, Redwood City, Calif., and Richard C. Knupp, Boulder, and Clifford J. Lewis, Wheatridge, Colo., assignors to Diamond Shamrock Corporation, Cleveland, Ohio
Original application Apr. 29, 1964, Ser. No. 363,390. Divided and this application June 20, 1967, Ser. No. 663,465
Int. Cl. B01d *11/02, 15/04*
U.S. Cl. 23—312 **4 Claims**



A method is provided for the continuous countercurrent contact of a solid, such as an ion-exchange resin, with

a liquid wherein the liquid is contacted stepwise with an increasingly fresh resin thereby insuring maximum ion-exchange efficiency.

3,573,005

PROCESS FOR CLEANING PHOSPHORIC ACID

Avraham Matitiahu Baniel and Ruth Blumberg, Haifa, Israel, assignors to Israel Mining Industries-Institute for Research and Development, Haifa, Israel

No Drawing. Continuation-in-part of application Ser. No. 610,758, Jan. 23, 1967, which is a continuation-in-part of application Ser. No. 438,093, Mar. 8, 1965. This application Nov. 13, 1968, Ser. No. 790,187

Int. Cl. B01d *11/04;* C01b *25/22*

U.S. Cl. 23—312 7 Claims

Process which comprises extracting technical-grade phosphoric acid by subjecting said technical-grade phosphoric acid, in the presence of a minor proportion of added sulfuric acid, to extraction with a dialkyl ether, such as diisopropyl ether, separating a phosphoric acid-containing ether extract, and recovering purified phosphoric acid from said ether extract.

3,573,006

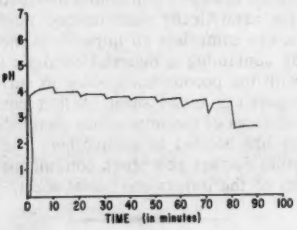
POLYMERIC ALUMINUM MAGNESIUM HYDROXY BUFFER COMPLEXES

I-Kao Shih and Eric Blaser, Toronto, Ontario, Canada, assignors to Warner-Lambert Pharmaceutical Company, Morris Plains, N.J.

Filed June 19, 1968, Ser. No. 738,312

Int. Cl. A01n *11/00;* C01f *7/74;* C07f *1/08*

U.S. Cl. 23—315 8 Claims



Complexes containing as cations aluminum and magnesium ionically bound with anions other than hydroxyl which are capable of neutralizing large quantities of acid rapidly to a pH of about 4 and capable of buffering at said pH over long periods of time. These complexes are useful in the treatment of gastric hyperacidity.

3,573,007

MEASURING SCALE DIVISION

Martin Gröbitz, Traunreut, Germany, assignor to Wenczler & Heidenhain, Traunreut, near Traunstein, Germany

Filed Aug. 9, 1968, Ser. No. 751,411

Claims priority, application Germany, Aug. 10, 1967, W 44,537

Int. Cl. B21d *21/00;* C23f *1/02;* G01d *15/00*

U.S. Cl. 29—191 8 Claims

A measuring scale division comprising a metallic carrier and a plurality of alternating light-reflecting and light-absorbing markings are provided on the metallic carrier. The markings of the measuring scale division comprise different metals.

3,573,008

COMPOSITE METAL ARTICLE OF COPPER MATERIAL WITH A COAT OF NICKEL AND TIN

Robert M. Akin, Jr., North Tarrytown, N.Y., assignor to Hudson Wire Company, Ossining, N.Y.

No Drawing. Filed May 2, 1968, Ser. No. 727,142

Int. Cl. B32b *15/00*

U.S. Cl. 29—199 1 Claim

Nickel-tin alloys containing from about three to about twenty percent by weight of nickel, preferably between six and about ten percent by weight, are described. These alloys are deposited on a metal substrate in the form of wire or the like, preferably a copper or copper alloy substrate by electrodeposition using a fluoroborate bath and carefully regulated pH, current density and temperature conditions. The resulting alloy coated composite product provides an electrical conductor having good solderability, freedom from galvanic corrosion and temperature capabilities which far exceed tin or tin-lead coatings on copper conductors.

3,573,009

RUST INHIBITED HYDROCARBON FUELS

Roland A. Bouffard, Union, N.J., assignor to Esso Research and Engineering Company

No Drawing. Continuation-in-part of application Ser. No. 547,731, May 5, 1966. This application June 3, 1968, Ser. No. 733,829

Int. Cl. C10l *1/22*

U.S. Cl. 44—63 7 Claims

The rusting of ferrous surfaces brought about by the presence of traces of moisture in gasoline is prevented by adding to the gasoline a small proportion, within the range of about 1 to 100 pounds per thousand barrels of gasoline, of a gasoline-soluble heteroaromatic amine oxide, the latter being characterized as a cyclic nitrogen compound having at least one tertiary nitrogen atom in the ring, the ring having two conjugated double bonds when it is a 5-membered ring and three double bonds when it is a 6-membered ring.

3,573,010

ACID SALTS OF POLYISOBUTENYL ALKYLENE POLYAMINES AS FUEL DETERGENTS

Enver Mehmedbasich, El Cerrito, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Aug. 29, 1968, Ser. No. 756,249

Int. Cl. C10l *1/22*

U.S. Cl. 44—63 9 Claims

Mineral acid salts of hydrocarbyl substituted polyamines, which are substantially free of aromatic unsaturation and of from about 460 to 10,000 molecular weight, find use as detergents in fuels, particularly in combination with a small amount of oil.

3,573,011

GASOLINE COMPOSITION

Gardner E. Gaston, Tarentum, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed Sept. 30, 1968, Ser. No. 763,974

Int. Cl. C10l *1/18*

U.S. Cl. 44—66 12 Claims

A gasoline motor fuel having improved anti-icing, detergency, anti-rust and ignition control characteristics is obtained by incorporating in the fuel a small amount of a combination of a polyoxypropylene ester and a monocarboxylic acid salt of an N-aliphatic substituted polymethylene diamine. The polyoxypropylene ester has the general formula

$$RCOOC_3H_6O(C_3H_6O)_nC_3H_6OH$$

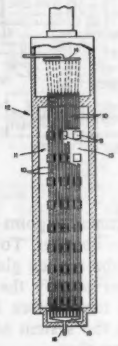
where R is an aliphatic hydrocarbon radical containing 7 to 29 carbon atoms and *n* is an integer of 20 to 100. The

monocarboxylic acid salt is the salt of a monocarboxylic acid which contains at least 8 carbon atoms in the molecule and an N-aliphatic substituted polymethylene diamine which has the general formula $RNH(CH_2)_xNH_2$ where R is an aliphatic hydrocarbon radical containing 8 to 30 carbon atoms and x is an integer of 2 to 10.

3,573,012
METHOD FOR STRAIGHT-THROUGH CRACKING OF HYDROCARBONS

Maurice R. Kitzen, Elkins Park, and Fraser M. Wall, Abington, Pa., assignors to Selas Corporation of America, Dresher, Pa.

Filed Feb. 20, 1969, Ser. No. 801,020
Int. Cl. C01b *2/14*
U.S. Cl. 48—214 6 Claims

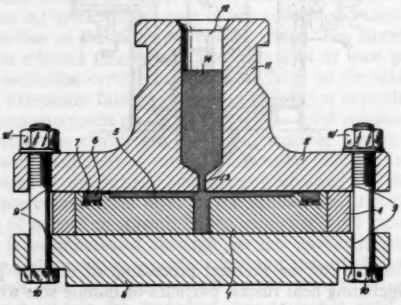


Hydrocarbon feed stocks are cracked by passing them in a straight linear path through elongated externally heated tubes of open cross-section, with a residence time at about 650° C. or higher of less than 0.5 second, preferably less than about .1–.4 second, a pressure drop of about 3–5 p.s.i. per tube, and a tube skin temperature of about 1000°–1200° C.

3,573,013
METHOD OF FORMING A ZINC ALLOY BONDED DIAMOND ABRASIVE TOOL

František Čurn and Antonín Dymeš, Prague Czechoslovakia, assignors to Naradí, narodni podnik, Prague Czechoslovakia

Filed Oct. 5, 1967, Ser. No. 673,077
Claims priority, application Czechoslovakia, Dec. 10, 1966, 7,877/66
Int. Cl. C04d *31/16*
U.S. Cl. 51—309 6 Claims

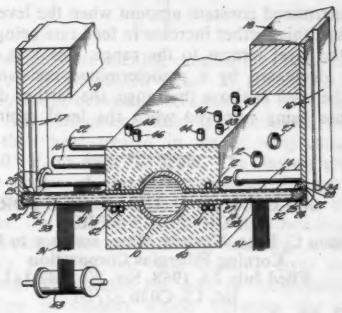


A grinding wheel in which diamond particles are uniformly distributed in an antimony-bearing zinc alloy and bonded by the alloy to each other and to a carrier disc is prepared by confining a packed particulate mixture including diamonds and antimony particles in a cavity bounded by a mold and the carrier inserted in the mold, introducing molten zinc alloy first by gravity and then under fluctuating fluid pressure, and solidifying the molten metal.

3,573,014
APPARATUS AND PROCESS FOR EXTRUDING GLASS FIBERS

Edward T. Strickland and Homer C. Amos, Palm Springs, Calif., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of application Ser. No. 556,800, May 13, 1966. This application Jan. 8, 1970, Ser. No. 3,558
Int. Cl. C03b *37/00*; B23c *23/00*
U.S. Cl. 65—1 20 Claims



Disclosed herein are apparatus and methods for extruding fibers from material such as glass. The basis for enabling the realization of high production of glass fibers in a practical and efficient manner are set forth, including pressures involved, sizes and lengths of orifices, problems of separation, and other parameters. The bushing configurations disclosed, such as tubular, hemispherical and other shapes, enable the bushing to withstand the pressures and temperatures involved without requiring excessively thick bushings, and enable separation and temperature uniformity without bushing deformation and elongation of orifices. Additionally, specific forms of bushings and feeder apparatus are disclosed, including a tubular form of bushing to which solid glass may be applied. Along with the disclosed apparatus, methods and fiber glass production are disclosed wherein orifices sufficiently closely spaced are used so that glass egressing therefrom would tend to coalesce when only a nominal pressure head is used, but the pressure is increased to overcome the effect of surface tension to cause separation of the glass into discrete streams, and then the pressure may be reduced but maintained sufficiently high to prevent coalescing while still maintaining separation of the streams at a high flow rate.

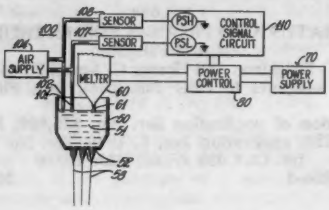
3,573,015
METHOD AND APPARATUS FOR CONTROLLING LIQUID LEVELS

Sheldon A. Canfield and Cletis L. Roberson, Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation

Filed May 9, 1968, Ser. No. 727,805
Int. Cl. C03b
U.S. Cl. 65—2 10 Claims

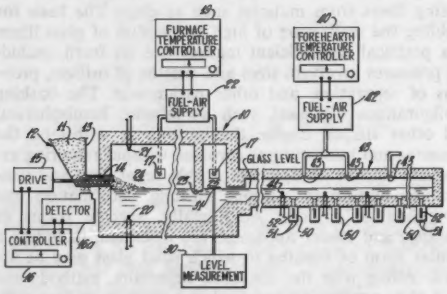
Method and apparatus for controlling the level of a body of material in a container when replenishing material removed from the body, by sensing levels outside of

a predetermined range of levels of the material, increasing the rate of feed of the replenishing material by an amount proportional to the time the level is below the range, and decreasing the rate of feed of the replenishing material by an amount proportional to the time the level is above the range. To prevent oscillation of the system and attain stability the rate of feed is further increased by



a predetermined constant amount when the level is below the range, this further increase in feed rate being removed when the level returns to the range. The rate of feed is further decreased by a predetermined constant amount when the level is above the range, the further decrease in feed rate being removed when the level returns to the range.

3,573,016
METHOD AND APPARATUS FOR FORMING FIBERS
Vernon C. Rees, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation
Filed July 24, 1968, Ser. No. 747,141
Int. Cl. C03b *37/00*
U.S. Cl. 65—2 **11 Claims**



Method and apparatus for forming fibers in heat-softenable material which includes means for continuously melting material to form a molten pool of the material and fiber-forming means connected to receive molten material from the pool. Means are used to heat the fiber-forming means. The level of the molten pool is sensed. Control means responsive to the level sensing is utilized to regulate the amount of heat supplied to the fiber-forming means.

3,573,017
METHOD AND APPARATUS FOR MELTING AND SUPPLYING HEAT-SOFTENABLE MATERIALS IN A PROCESS
Paul D. Griem, Jr., Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation
Filed Nov. 4, 1968, Ser. No. 773,070
Int. Cl. C03b *37/00*
U.S. Cl. 65—2 **20 Claims**

A preferred embodiment of the invention illustrates novel apparatus for carrying out a method for producing glass fibers including feeding glass batch to a furnace for melting into a pool, flowing molten glass from the pool into a feeder means and attenuating streams from the feeder into fibers. Fuel flow to furnace burners is regulated in response to deviations of actual furnace temperatures from a preselected setpoint temperature. Fuel flow requirement changes are anticipated by monitoring the rate of batch feed to the furnace and modifying the fuel

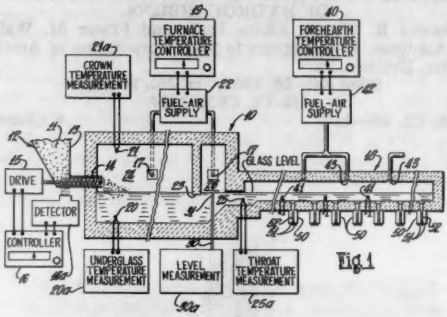
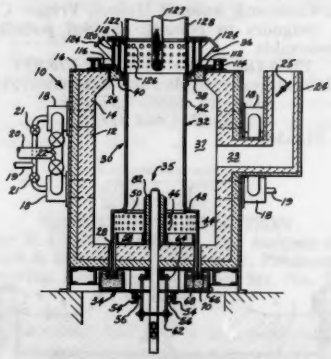


Fig 1

flow setpoint or the furnace setpoint temperature in response to batch feed rate changes. To provide more control the temperature of the molten glass exiting from the pool is sensed to further modify the fuel flow setpoint or the furnace setpoint temperature in accordance with glass flow rates through the system as indicated by temperature changes in exiting glass.

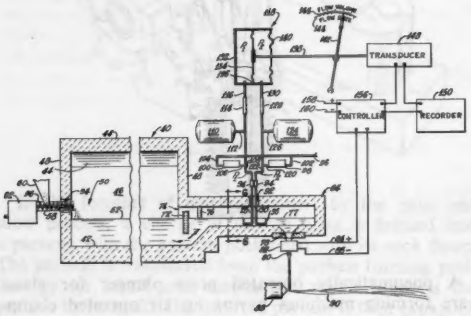
3,573,018
APPARATUS AND METHOD FOR HEAT TREATING PARTICULATE MATTER
John D. Nesbitt and Joseph J. Joyce, Toledo, and Norman T. Ferguson, Maumee, Ohio, assignors to Midland-Ross Corporation, Toledo, Ohio
Filed June 27, 1968, Ser. No. 740,588
Int. Cl. C03b *19/10*
U.S. Cl. 65—21 **24 Claims**



A furnace for the thermal processing of discrete particles including heat fusible particles of minute size which reduce in density upon being subjected to adequate heat. The particles to be treated are dispersively launched into a hot gas wind stream passing through a heating chamber. The particles are heated by radiation and convection

while their density is reduced and while the wind stream conveys them through the heating chamber. A quench manifold may be provided for laterally injecting a cooling medium into the stream of hot gases and particles exiting the heating chamber.

3,573,019
LIQUID FLOW MEASURING PROCESS AND APPARATUS
Vernon C. Rees, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation
Filed July 30, 1965, Ser. No. 476,124
Int. Cl. C03c; C03b
U.S. Cl. 65—29 **8 Claims**



Process and apparatus for measuring rate of flow of liquids through conduits, comprising immersed probes facing respectively against the direction of flow and in the direction of flow, with constant volumertic gas flow through each, as small discrete bubbles arising from a point beneath the surface of the liquid to the surface, whereby a differential pressure is produced that serves as a signal which can be extrapolated to volume of flow, and transduced for recording and control functions.

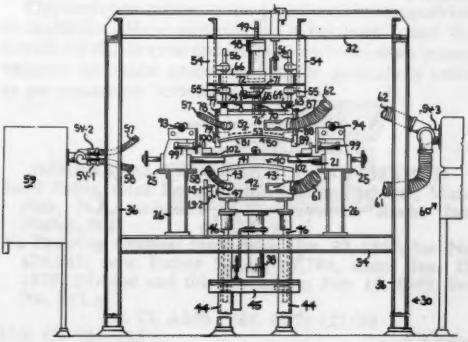
3,573,020
GLASS-CERAMIC ARTICLE AND METHOD
Bruce R. Karstetter, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 365,203, May 5, 1964. This application Sept. 30, 1968, Ser. No. 763,966
Int. Cl. C03c *3/22*
U.S. Cl. 65—30 **6 Claims**

This invention relates to the strengthening of glass-ceramic articles in which the crystal content thereof comprises the predominant part of the articles and containing nepheline as the principal crystal phase. The strengthening is effected through the conversion of at least part of the nepheline crystals in a surface layer of the article to low expansion lithium alumino-silicate-type crystals such as beta-eucryptite and beta-spodumene solid solution type crystals, this conversion causing the surface layer to have a lower coefficient of thermal expansion than the interior portion of the article and thereby creating an integral surface compression layer in the article. The transformation of nepheline crystals to the beta-eucryptite type crystals is accomplished through an ion exchange reaction taking place within a surface layer of the article wherein lithium ions from an external source are exchanged for sodium ions in the nepheline, this exchange itself being undertaken at a high temperature or this exchange being undertaken at a low temperature and being followed by a high temperature heat treatment.

3,573,021
METHOD OF MAKING A CERAMIC-METALLIC COMPOSITE
Carlyle F. Smith, Alfred Station, N.Y., assignor to Sybron Corporation, Rochester, N.Y.
Filed June 2, 1967, Ser. No. 643,131
Int. Cl. C03c *29/00*
U.S. Cl. 65—43 **8 Claims**

A high temperature melting cementitious material such as glass dust is introduced either in aqueous solution, paste or dry form, between a ceramic core and a metallic envelope. Any suspending fluid is volatilized, and the assembly then heat treated in air at temperatures of about 1400° F. to melt the glass. The molten glass assumes the shape of the space between the core and envelope so that upon cooling from the heat treating temperature, the glass solidifies into a rigid bonding layer and the metal envelope contracts exerting a uniform compressive force on the rigid bonding layer and the ceramic core. This places the core in compression and the envelope in tension which increases the overall strength of the ceramic-metallic composite.

3,573,022
METHOD AND APPARATUS FOR SHAPING GLASS SHEETS
Robert G. Frank, Tarentum, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Filed Mar. 11, 1968, Ser. No. 711,946
Int. Cl. C03b *23/02*
U.S. Cl. 65—104 **17 Claims**



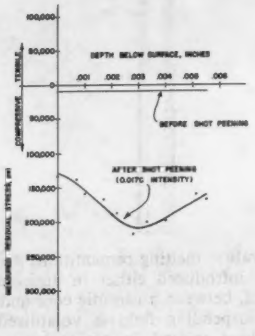
Glass sheets are shaped between press shaping molds having foraminous shaping surfaces. Heated gas and cooled gas are applied through the foramina of the shaping surfaces to separate the sheet from a foraminous surface in contact therewith and to cool the glass sheet respectivity. Reciprocating members engage the edges of the sheet to reciprocate the sheet in a generally horizontal direction until the glass sheet is no longer in a deformable state.

3,573,023

METHODS FOR IMPROVING HARDNESS AND STRENGTH OF CERAMIC MATERIALS

David A. Thomas, Bethlehem, Pa., and David N. French, Ridgewood, N.J., assignors to Ingersoll-Rand Company, New York, N.Y.

Filed Sept. 24, 1968, Ser. No. 762,111
Int. Cl. C03b 27/00
U.S. Cl. 65—114 6 Claims



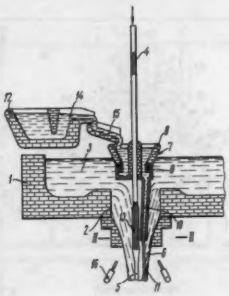
Methods for improving the hardness and strength of frangible or relatively brittle materials, involving surface deformation by mechanical means to establish compressive stresses in the material surface.

3,573,024

DEVICE FOR CONTINUOUS STRETCHING OF GLASS CAPILLARIES WITH AN ENAMEL BAND

Oleg Alexandrovich Golozubov, Novye Kuzminki, Kvartal 118, korpus 38, kv. 70, Moscow, U.S.S.R., and Vladimir Ioganovich Kalganov, Ulitsa Mira 16, kv. 12, Klin Moskovskoi Oblasti, U.S.S.R.

Filed July 28, 1967, Ser. No. 656,904
Int. Cl. C03b 5/32
U.S. Cl. 65—145 2 Claims



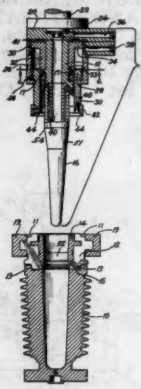
A device for the continuous stretching of glass capillaries with an enamel band, wherein a bath having a forming hole accommodates a vessel for enamel submerged in the glass melt and consisting of two parts—an upper ceramic part and a lower part of metal with a high thermal conductivity, there being a device for introducing the enamel into the capillary being stretched, and another vessel for melting the enamel arranged outside the bath with the glass melt and communicating with the vessel in the bath containing the glass melt.

3,573,025

PNEUMATICALLY OPERATED PRESS PLUNGER

Joseph R. Hamilton, Anderson, Ind., assignor to Lynch Corporation, Anderson, Ind.

Filed July 29, 1968, Ser. No. 748,259
Int. Cl. C03b 11/10, 11/12
U.S. Cl. 65—172 8 Claims



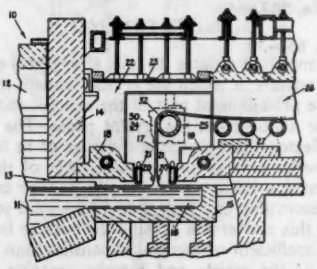
A pneumatically operated press plunger for glassware forming machines having an air operated clamping ring for cone-socket cooperation, along with a parison mold, in clamping the two halves of a split neck ring together during a parison pressing operation. The press plunger also has an air operated plunger holder to insure the plunger being held in operative position yet permit ready change of plungers to accommodate different types of ware.

3,573,026

APPARATUS FOR DEFLECTING SOFTENED GLASS SHEET MATERIAL FROM ONE DIRECTION TO ANOTHER DIRECTION OF DRAW

Robert E. Maltby, Jr., Perrysburg, and William E. McCown and Eugene H. Heimrich, Toledo, Ohio, assignors to Libbey-Owens-Ford Company, Toledo, Ohio

Filed Feb. 26, 1968, Ser. No. 708,021
Int. Cl. C03b 15/04
U.S. Cl. 65—182 10 Claims

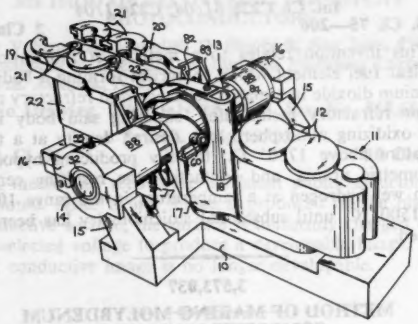


A device for supporting and conveying a continuous ribbon of pliable sheet material. The ribbon passes over a stationary curved member having a shallow recess formed in its surface, and an aeriform fluid is admitted to the recess under pressure to create a plenum beneath the ribbon whereby the ribbon is supported on a fluid film out of contact with the supporting member as it passes thereover.

3,573,027
APPARATUS FOR FORMING BLOWN GLASS ARTICLES

Robert E. Nuzum, Sr., Sylvania, Ohio, assignor to Owens-Illinois, Inc.

Filed May 8, 1968, Ser. No. 727,623
Int. Cl. C03b 9/16, 9/26
U.S. Cl. 65—235 10 Claims



In the forming of glass containers by the blow and blow process, a charge of molten glass is formed into a parison, with the parison positioned with its neck down. The parison is transferred from the parison forming position by an invert arm mechanism which supports the parison by its neck. The inverted parison is then expanded into final container shape within a blow mold. A pair of invert arms, mounted for rotation about the same invert axis, are provided so that while a parison is being formed, a previously formed parison is being blown at the blow station. The formed parison is inverted and transferred to the blow station by one neck mold carrying arm while the other neck mold carrying invert arm is opened and reverted to the parison forming side of the apparatus. In this manner a full overlap cycle of operation is carried out such that parisons are being formed and simultaneously being blown into container shapes.

3,573,028
METHOD FOR SUPPRESSING THE NITRIFICATION OF AMMONIUM NITROGEN IN SOIL

Kisaburo Ueno, Koza-gun, Akira Hirose, Yokohama, and Tetsuichi Shinozawa, Chigasaki, Japan, assignors to Mitsui Toatsu Chemicals Incorporated, Tokyo, Japan

No Drawing. Continuation-in-part of application Ser. No. 595,607, Nov. 21, 1966. This appplication May 2, 1968, Ser. No. 726,240
The portion of the term of the patent subsequent to Dec. 9, 1986, has been disclaimed
Int. Cl. A01n 9/14
U.S. Cl. 71—27 10 Claims

A method for suppressing the nitrification of ammonium nitrogen in soil comprising treating the soil in a plant growing area with a alkanoylsulfathiazole or sodium salt of sulfathiazole and a composition therefor.

3,573,029
SEPARATION OF AMMONIUM PHOSPHATE FROM NITROPHOSPHATE PRODUCT MIXTURES

William T. Curless, Overland Park, Kans., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

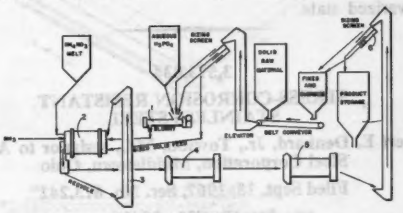
No Drawing. Filed Apr. 25, 1968, Ser. No. 725,587
Int. Cl. C05b 7/00
U.S. Cl. 71—34 4 Claims

By controlling a number of variables within specific limits, solid mixed ammonium phosphate fertilizer substantially free of solid ammonium nitrate and having a NH_3:H_3PO_4 mole ratio varying from 1.1 to 2.0 is crystallized from ammoniated nitrophosphate product. Optionally, a second solid rich in ammonium nitrate may be isolated from the liquid phase of the ammonium phosphate removal stage. The liquid from this second stage may be recycled or utilized for other purposes.

3,573,030
PROCESS FOR MIXED FERTILIZER GRANULATION

Wilbur A. McPherson, Baxter Springs, Kans., and Robert W. Hamilton, Joplin, Mo., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

Filed May 7, 1968, Ser. No. 727,238
Int. Cl. C05b 19/00
U.S. Cl. 71—64 2 Claims



In a practically dust-free process for manufacturing substantially spherical fertilizer granules the feed streams to the granulator consist of solids of controlled particle size, molten ammonium nitrate, ammonia, a slurry produced by wet-grinding oversize solids and fines in aqueous phosphoric acid, and granular product recycled directly from the granulator exit.

3,573,031
METHOD OF CONTROLLING WEEDS

Harry Tilles, El Cerrito, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 106,444, May 1, 1961. This application Apr. 27, 1964, Ser. No. 362,948
Int. Cl. A01n 9/12; C07d
U.S. Cl. 71—100 9 Claims

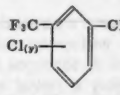
This invention relates to the use of certain compositions as herbicides. More particularly, it has been found that certain alkyl 1-hexamethyleneimine-carbothiolates possess valuable herbicidal properties and are particularly useful as pre-emergence herbicides.

3,573,032
HERBICIDAL COMPOSITION AND METHOD

Josef Fellig, Glen Rock, and Benjamin Pecherer, Montclair, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Original application Mar. 30, 1967, Ser. No. 626,983, now Patent No. 3,489,784, dated Jan. 13, 1970. Divided and this application July 16, 1969, Ser. No. 842,357
Int. Cl. A01n 9/24; C07c 121/66
U.S. Cl. 71—115 4 Claims

Herbicidal compounds of the formula



wherein R is either —CN, —$CONH_2$ or —COOH and y is either 0 or 1 and the chlorine is either ortho or para to either the —CF_3 or —CH_2R group

useful as selective pre-emergent herbicides.

3,573,033

PROCESSES OF DIRECT REDUCTION OF MINERALS

Jean Bouchet, Clery-Saint-Andre, Loiret, France, assignor to Societe Metallurgique d'Imphy, Paris, France

No Drawing. Continuation of application Ser. No. 511,991, Dec. 6, 1965. This application Feb. 27, 1969, Ser. No. 804,378

Claims priority, application France, Dec. 16, 1964, 998,852

Int. Cl. C21b *13/00*

U.S. Cl. 75—33 5 Claims

Direct reduction of ores which are difficult to reduce is started at the equilibrium temperature by adding to the charge of the ore, reducing agents and slag forming materials heated to the equilibrium temperature a supplemental charge containing the metal of the mineral in pulverized state.

3,573,034

STRESS-CORROSION RESISTANT STAINLESS STEEL

Elbert E. Denhard, Jr., Towson, Md., assignor to Armco Steel Corporation, Middletown, Ohio

Filed Sept. 18, 1967, Ser. No. 673,242

Int. Cl. C22c *39/20*

U.S. Cl. 75—128 9 Claims

Austenitic chromium-nickel stainless steel of high carbon content, and various products fashioned thereof, which steel and products are strong, ductile and wear-resistant and which moreover are resistant to the attack of chlorides in applications where great stress is encountered. More particularly, the steel comprises about 18% to about 25% chromium, about 9% to about 20% nickel, about .25% to about .85% carbon, with carbon being inversely proportioned to nickel, and with remainder substantially iron.

3,573,035

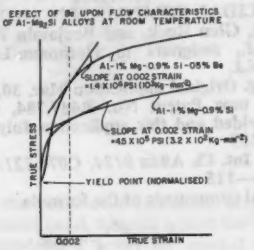
ALUMINUM-BASED, HEAT TREATABLE ALLOY

Leonard B. Griffiths, North Reading, Mass., assignor to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Continuation-in-part of application Ser. No. 667,910, Sept. 15, 1967. This application Jan. 24, 1969, Ser. No. 793,917

Int. Cl. C22c *21/02*; C22f *1/04*

U.S. Cl. 75—147 25 Claims



A high strength, heat treatable alloy consisting essentially of from about 0.6 to 3.6% Mg; about 0.5 to 1.5% Si and about 0.2 to 0.5% Be is provided which is age hardenable and dispersion hardenable.

3,573,036

METHOD FOR PRODUCING STOICHIOMETRIC URANIUM DIOXIDE COMPOSITIONS

Norman P. Fairbanks and James A. McGurty, Cincinnati, Ohio, assignors to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Filed Nov. 15, 1966, Ser. No. 594,636

Int. Cl. C22b *61/04*; C22c *1/04*

U.S. Cl. 75—206 2 Claims

This invention relates to a method of fabricating a nuclear fuel element which comprises forming a body of uranium dioxide in a matrix selected from refractory metal or refractory metal alloy, sintering said body in a non-oxidizing atmosphere to a desired density at a temperature above 1700° C., thereby producing hypostoichiometric urania, and contacting the resulting cermet with wet hydrogen at a temperature in the range 1000° C.–1500° C. until substantial stoichiometry has been attained.

3,573,037

METHOD OF MAKING MOLYBDENUM COMPOSITE MATERIALS

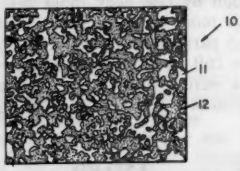
Richard H. Krock, Peabody, and Edward J. Zdanuk, Lexington, Mass., assignors to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Original application Jan. 22, 1968, Ser. No. 699,658, now Patent No. 3,407,048, dated Oct. 22, 1968. Divided and this application June 7, 1968, Ser. No. 749,900

The portion of the term of the patent subsequent to Feb. 7, 1984, has been disclaimed

Int. Cl. B22f *7/08*, *3/26*

U.S. Cl. 75—208 8 Claims



A composite material in which the primary by volume constituent is molybdenum having a low gas content for use as a current carrying material. The composite material consists essentially of a substantially continuous skeleton of integrally bonded molybdenum particles, the voids of which are filled by a substantially continuous matrix of a metal alloy which is substantially mutually insoluble and substantially non-reactive with molybdenum. The alloy matrix includes at least one highly conductive metal and another metal which is less conductive wherein the less conductive metal tends to concentrate at the interface between the molybdenum and the alloy matrix.

3,573,038

POROUS FORMED CATALYST BODY AND PROCESS FOR ITS PRODUCTION

Margarete Jung, Kelkheim, and Hans von Doehren, Frankfurt am Main, Germany, assignors to Varta Aktiengesellschaft, Frankfurt am Main, Germany

Filed Oct. 10, 1966, Ser. No. 585,548

Claims priority, application Germany, Oct. 9, 1965, V 29,493; Mar. 25, 1966, V 30,711

Int. Cl. B22f *1/00*

U.S. Cl. 75—211 23 Claims

Catalyst powders, such as platinum, palladium or Raney metals, are rendered insensitive to air or oxygen by treatment with an oxygenated chlorine, bromine or

iodine compound, such as potassium or sodium iodate, chlorate or bromate. The powder obtained is essentially hydrogen-free, non-pyrophoric and reactivatable. The powder may be molded by heat and pressure to a formed porous body.

3,573,039

METHOD OF RECOVERING PERSISTENT PHOTOCONDUCTORS

Ulo Vahtra and Meredith D. Shattuck, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

No Drawing. Filed July 18, 1966, Ser. No. 565,687

Int. Cl. G03g *13/22*

U.S. Cl. 96—1 **10 Claims**

A method of recovering persistent photoconductors is disclosed. After a first image is produced on the photoconductive surface, the surface is uniformly charged to a pre-selected voltage to produce a developable image. The first conductive image is no longer developable.

3,573,040

HEAT DESENSITIZING OF CONVERTIBLE PLATE

Sangho E. Back, Vancouver, Wash., assignor to Crown Zellerbach Corporation, San Francisco, Calif.

No Drawing. Filed Jan. 22, 1968, Ser. No. 699,322

Int. Cl. G03g

U.S. Cl. 96—1 **4 Claims**

A convertible plate adapted for conversion by electrostatic procedures into a lithographic printing plate, comprising a sheet base formed from a paper web, and a dielectric film extending over the sheet base adapted to receive an image-defining electrostatic charge. The film is degradable by the application of heat. In preparing a printing plate from the convertible plate, the image-defining electrostatic charge is developed, and in nonimage areas the film is densitized by degrading the film with heat. This renders such nonimage areas of the film hydrophilic, or wettable with an aqueous fountain solution, in a lithographic printing process.

3,573,041

PROCESS FOR PREPARING A PLANOGRAPHIC PRINTING PLATE

Jozef Leonard Van Engeland, St. Katelijne-Waver, Noel Jozef De Volder, Edegem, and Albert Lucien Poot, Kontich, Belgium, assignors to Gevaert-Agfa N.V., Mortsel, Belgium

No Drawing. Filed Mar. 6, 1968, Ser. No. 710,729

Claims priority, application Great Britain, Mar. 6, 1967, 10,475/67

Int. Cl. G03g

U.S. Cl. 96—1 **7 Claims**

A planographic printing plate is prepared by xerographically developing a latent electrostatic image on a xerographic layer using an inorganic photoconductor adapted to provide zinc ions, the image being developed with a developing composition forming a hydrophobic deposit on the xerographic layer in the image areas. The resultant xerographically developed layer is treated with an aqueous solution containing a hydrophilic zinc chelate or a compound capable of forming such a chelate with zinc ions.

3,573,042

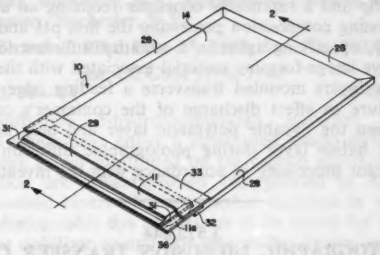
PHOTOGRAPHIC COLOR DIFFUSION TRANSFER PROCESSES AND FILM UNIT FOR USE THEREIN

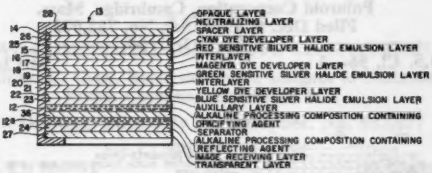
Terry W. Milligan, Belmont, and Richard W. Young, Wellesley Hills, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed July 30, 1969, Ser. No. 846,177

Int. Cl. G03c *7/00, 5/54, 1/40*

U.S. Cl. 96—3 **30 Claims**





Simultaneous application of two processing compositions, one containing an opacifying agent and the other a reflecting material, to an exposed permanently structured film unit to obtain a color diffusion transfer therein.

3,573,043

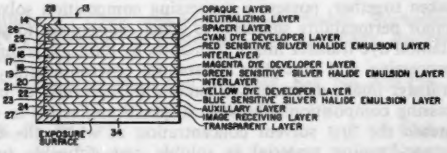
PHOTOGRAPHIC DIFFUSION TRANSFER COLOR PROCESS AND COMPOSITE FILM UNIT FOR USE THEREIN

Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of application Ser. No. 622,283, Mar. 10, 1967, now Patent No. 3,415,644, dated Dec. 10, 1968. This application Dec. 9, 1968, Ser. No. 782,056

Int. Cl. G03c *7/00*

U.S. Cl. 96—3 **34 Claims**



The invention relates to a composite photographic film unit structure which comprises a plurality of essential layers including, in sequence, a first dimensionally stable, liquid impermeable layer; a polymeric layer containing sufficient acid to effect reduction of an akaline processing composition having a first pH at which a dye image-forming material is substantially soluble and diffusible as a function of the exposure of its associated silver

halide layer to a second pH at which said dye image-forming material is substantially nondiffusible; one or more photosensitive silver halide layers each having associated therewith a dye image-forming material which is soluble and diffusible, in alkali, at the first pH, as a function of the silver halide layer's exposure; a polymeric layer dyeable by the dye image-forming materials; and a second dimensionally stable, liquid impermeable transparent layer.

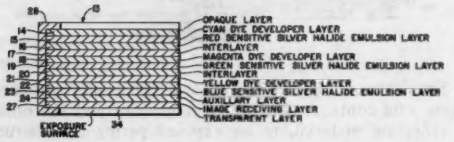
The film unit structure additionally includes means securing the respective layers in substantially fixed relationship and a rupturable container retaining an alkaline processing composition possessing the first pH and, preferably, opacifying agent in a quantity sufficient to mask the dye image-forming material associated with the silver halide layers mounted transverse a leading edge of the structure to effect discharge of the container's contents between the dyeable polymeric layer and next adjacent silver halide layer during photographic diffusion transfer color processing in accordance with the invention.

3,573,044

PHOTOGRAPHIC DIFFUSION TRANSFER COLOR PROCESS AND COMPOSITE FILM UNIT FOR USE THEREIN

Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 9, 1968, Ser. No. 782,075
Int. Cl. C03c *7/00*
U.S. Cl. 96—3 **34 Claims**



The invention relates to a composite photographic film unit structure which comprises a plurality of essential layers including, in sequence, a first dimensionally stable, liquid impermeable layer; one or more silver halide emulsion layers each having associated therewith a dye image-forming material which is soluble and diffusible during processing, as a function of the exposure of its associated silver halide emulsion layer, at a first solvent concentration; a polymeric layer dyeable by the dye image-providing materials; and a second dimensionally stable, liquid impermeable transparent layer.

The film unit structure additionally includes means securing the respective layers in substantially fixed relationship and the dimensionally stable support layers, taken together, possess a processing composition solvent vapor permeability sufficient to effect, subsequent to substantial dye transfer image formation by diffusion transfer processing and preceding substantial environmental dye transfer image degradation, osmotic transpiration of processing composition solvent in a quantity effective to decrease the first solvent concentration at which the dye image-forming material is soluble and diffusible to a second solvent concentration at which the dye image-forming material is substantially nondiffusible.

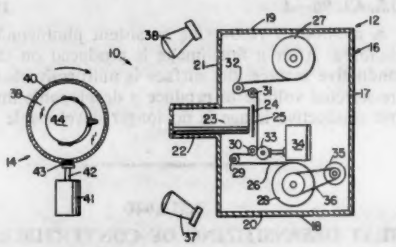
The structure also includes a rupturable container retaining processing composition in a quantity sufficient to provide the first solvent concentration and, preferably, opacifying agent in a quantity sufficient to mask dye image-forming material associated with the silver halide emulsions mounted transverse a leading edge of the structure to effect discharge of the container's contents between the dyeable polymeric layer and next adjacent silver halide emulsion layer during photographic diffusion transfer color processing in accordance with the invention.

3,573,045

SCANNING TECHNIQUE, IMAGE AND ARTICLE PRODUCED THEREFROM

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Application Jan. 31, 1962, Ser. No. 170,199, which is a division of application Ser. No. 559,232, Jan. 16, 1956. Divided and this application Feb. 1, 1966, Ser. No. 524,321
Int. Cl. G03c *5/04*
U.S. Cl. 96—27 **13 Claims**



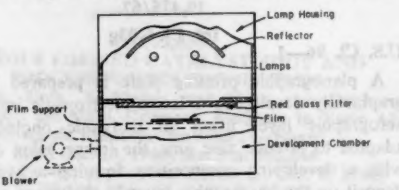
A method for forming a continuous photograph of a three-dimensional object which includes moving either the object or a camera continuously so that the camera views the entire surface of the object in a single continuous movement and passing a narrow band of light from the object onto a moving film strip which continuously moves past the light receiving mechanism of the camera to continuously expose the film strip. This continuous photograph of the entire surface of the object can then be printed on a thermoplastic or other formable material and the thermoplastic then molded about the original object photographed, or a model of the object having the same contours, to form a molded article; or the continuous photograph can be re-projected onto a model of the object having the same contours as the original object, and whose surface is light sensitive to thereby develop the photograph onto the second object.

3,573,046

HEAT TREATMENT PROCESS TO CONTROL CONTRAST IN NONSILVER LIGHT SENSITIVE SYSTEMS

Richard A. Fotland, Lyndhurst, and Frederick N. Robertson and James M. Lewis, Cleveland, Ohio, assignors to Horizons Incorporated, a division of Horizons Research Incorporated

Filed May 1, 1968, Ser. No. 725,885
Int. Cl. G03c *5/24*
U.S. Cl. 96—48 **11 Claims**



The control of contrast and/or gamma of a nonsilver photosensitive film by controlling the temperature of the film during optical development of the same.

3,573,047

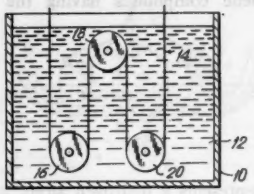
TECHNIQUE FOR AVOIDING DAMAGE TO FILM AND THE LIKE BY FOREIGN OBJECTS

Saul Jeffee, Scarsdale, N.Y., assignor to Movielab, Inc., New York, N.Y.

Filed June 27, 1967, Ser. No. 649,298

Int. Cl. G03c 5/26, 3/02, 1/76

U.S. Cl. 96—50 12 Claims



Foreign objects which might be trapped between a film and its guide roller are voided by providing suitable holes in the film or a leader which any such objects can drop through. This avoids damage to the film.

3,573,048

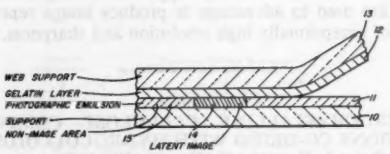
PHOTOGRAPHIC WEB PROCESSING

Billy K. Boller, Edward A. Smith, and Allan L. Sorem, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 31, 1968, Ser. No. 701,971

Int. Cl. G03c 5/38

U.S. Cl. 96—61 16 Claims



A web processing method obtains a silver image by developing an exposed silver halide emulsion layer by laminating the exposed layer to a processing sheet having imbibed therein a processing solution containing a stabilizing agent which forms a substantially water insoluble silver salt compound. The resulting integral element permits convenient handling and viewing of the image.

3,573,049

PHOTOGRAPHIC MATERIALS AND PROCESSES FOR DEVELOPING PHOTOGRAPHIC COMPOSITIONS HAVING A ZWITTERIONIC AND ANIONIC ELEMENTS

Norman W. Kalenda, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Oct. 2, 1967, Ser. No. 671,955

Int. Cl. G03c 5/30

U.S. Cl. 96—66.3 20 Claims

Photographic compositions and elements comprising a zwitterionic compound and an anionic compound. In one aspect, this invention relates to a process comprising developing a photographic image in the presence of a zwitterionic compound and an anionic compound. In another aspect, this invention relates to a photographic developer composition comprising a photographic developing agent, a zwitterionic compound, and an anionic compound.

3,573,050

COLOR PHOTOGRAPHIC LAYERS COMPRISING NON-DIFFUSIBLE 5 - HYDROXYCOUMARANS AS STABILIZING COMPOUNDS

Kent C. Brannock, Kingsport, Tenn., and Gregory J. Lestina, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Feb. 27, 1969, Ser. No. 803,080

Int. Cl. G03c 1/84, 1/40

U.S. Cl. 96—84 16 Claims

Nondiffusible 5-hydroxycoumaran stabilizer compounds which have either a substituted amino group or an alkoxy group substituted on the carbon atoms in the 2 position are advantageously incorporated in hydrophilic colloid layers of photographic elements in which color photographic dye images are to be stored for viewing. The stabilizer compounds protect dye images against the fading effects of prolonged exposure to light.

3,573,051

TWO-COMPONENT DIAZOTYPE COMPOSITION

William C. Gray, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed July 31, 1967, Ser. No. 657,077

Int. Cl. G03c 1/58, 1/54

U.S. Cl. 96—91 12 Claims

A two-component diazotype medium which provides, upon exposure and development, a neutral image with low contrast is obtained by employing as the light-sensitive layer a polymeric matrix such as cellulose acetate having dispersed therein a light-sensitive diazo dye-forming system comprising (1) as the diazo component, a 2,5-dialkoxy-4-morpholinobenzene diazonium salt, and optionally a 4-(dialkylamino)benzene diazonium salt; (2) as a blue coupler, at least one of a 2-hydroxy-N-(2-alkylphenyl)-3-naphthamide, and a 2-hydroxy-N-(2,4-dialkoxy-5-halophenyl)-3-naphthamide; and (3) as a yellow coupler, an N-substituted or N,N-di-substituted 1-hydroxy-2-naphthamide or a 2-acylamido-5-alkylphenol. The dye-forming system is preferably stabilized against premature coupling by the presence of acid stabilizers such as 5-sulfosalicyclic acid.

3,573,052

DIAZOTYPE MATERIALS OF IMPROVED STABILITY

William C. Gray and Frederick A. Stahly, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Oct. 30, 1967, Ser. No. 679,176

Int. Cl. G03c 1/54, 1/58, 1/60

U.S. Cl. 96—91 6 Claims

The fading of azo dyes is inhibited by the presence of certain polymeric materials, both alone and in combination with certain hindered phenols which are substituted in the 2-position and in the 4-position. These stabilizing polymers are particularly useful as binder materials in diazotype reproduction media, especially the "two component" media containing a diazonium salt, a blue coupler and a yellow coupler in proportions sufficient to yield an azo dye image of neutral hue after exposure and development.

3,573,053

PHOTOGRAPHIC PROCESS FOR PRODUCING A PLURALITY OF IMAGES ON PREDETERMINED AREAS OF A CHEMICALLY DESENSITIZED SILVER HALIDE LAYER BY SEQUENTIAL THERMAL RESENSITIZATION, EXPOSURE, AND CHEMICAL RE-DESENSITIZATION OF EACH AREA

Edgar A. MacWilliam, Hilton, and Charles A. Goffe, Brockport, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed May 2, 1968, Ser. No. 726,231
Int. Cl. G03c *1/36, 5/04*
U.S. Cl. 96—101 15 Claims

A photographic process in which a generally desensitized photographic silver halide element is locally resensitized in one area by application of heat, exposed to produce a latent image in the resensitized area, desensitized in the resensitized and exposed area, locally resensitized in another area, and this sequence of steps repeated to produce latent images in other areas and finally photographically developing and fixing the exposed photographic element, is used to advantage to produce a plurality of photographic images in predetermined areas of the photographic element in such a way that latent images in the element are not affected by light exposure used to produce subsequent latent images.

3,573,054

PHOTOGRAPHIC PROCESS FOR PRODUCING A PLURALITY OF IMAGES ON PREDETERMINED AREAS OF A NON-SPECTRALLY SENSITIZED SILVER HALIDE LAYER BY SEQUENTIAL SPECTRAL SENSITIZING, EXPOSING, AND CHEMICAL DESENSITIZATION OF EACH AREA

John F. Tinker, Brockport, and Jean E. Jones, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed May 2, 1968, Ser. No. 726,230
Int. Cl. G03c *1/36, 5/04*
U.S. Cl. 96—101 14 Claims

A photographic process in which a photographic element comprising a support coated with a non-spectrally sensitized silver halide layer is locally spectrally sensitized in one area to an exposing light, exposed to produce a latent image in the spectrally sensitized area, desensitized in the spectrally sensitized and exposed area, locally spectrally sensitized in a second area to an exposing light, and this sequence of steps repeated to produce latent images in other areas and finally photographically developing and fixing the exposed photographic element, is used to advantage to produce a plurality of photographic images in predetermined areas of the photographic element in such a way that latent images in the element are not affected by light exposure used to produce subsequent latent images.

3,573,055

PHOTODEVELOPABLE DIRECT PRINT COMPOSITIONS COMPRISING IODOCADMATES IN ADMIXTURE WITH SILVER HALIDES

Norman Allentoff and Charles A. Goffe, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Mar. 4, 1968, Ser. No. 709,935
Int. Cl. G03c *1/28*
U.S. Cl. 96—108 8 Claims

Photodevelopable direct-print silver halide compositions comprising iodocadmates, for example—potassium iodocamate, exhibit improved photographic properties, such as improved speed. In one embodiment direct-print compositions comprise an iodocadmate in combination with a cuprous halide.

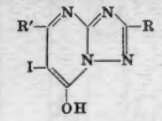
3,573,056

TETRAAZAINDENE-STABILIZED SILVER HALIDE PHOTOGRAPHIC EMULSIONS

Terence W. Baldock and Alan N. Ferguson, Harlow, Essex, England, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Filed Dec. 5, 1967, Ser. No. 688,018
Claims priority, application Great Britain, Dec. 8, 1966, 55,114/66
Int. Cl. G03c *1/34*
U.S. Cl. 96—109 7 Claims

Tetraazaindene compounds having the general formula



in which R represents a hydrogen atom, an alkyl or an alkylthio group, and R′ represents an alkyl group; and salts thereof; as well as the process for their preparation. This invention also relates to the use of such tetraazaindene compounds as stabilizers in silver halide photographic emulsions.

3,573,057

HIGH RESOLVING POWER PHOTOGRAPHIC EMULSIONS AND MATERIALS

Guy W. W. Stevens, Berkhamsted, England, assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed May 3, 1967, Ser. No. 635,705
Int. Cl. G03c *1/72, 1/02*
U.S. Cl. 96—112 18 Claims

Photographic hydrophilic colloid binder silver halide Lippmann emulsions that contain a removable and substantially photographically inert dye which absorbs light of the spectral composition selected for exposing the emulsion when coated on a support as the light-sensitive layer are used to advantage to produce image reproductions of exceptionally high resolution and sharpness.

3,573,058

MICROCRYSTALLINE CELLULOSE COMPOSITIONS CO-DRIED WITH HYDROCOLLOIDS

Peter J. Tiemstra, La Grange, Ill., assignor to Swift & Company, Chicago, Ill.

No Drawing. Filed Jan. 30, 1967, Ser. No. 612,329
Int. Cl. A23l *1/00*
U.S. Cl. 99—1 8 Claims

Attrited microcrystalline cellulose is admixed and co-dried with a protective hydrocolloid such as gelatin, sodium alginate and the like. The hydrocolloid should be employed in an amount sufficient to produce a sediment less than about 20% (basis dry weight of microcrystalline cellulose employed) upon re-hydration of the co-dried product.

3,573,059

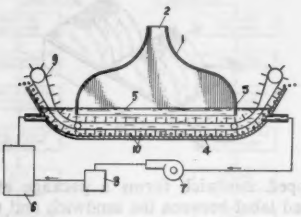
METHOD OF PREVENTING THE DETERIORATION OF FRYING OILS IN FRYING APPARATUSES AND A HOOD FOR USE ON SUCH APPARATUSES

Etsuji Yuki, 1454 banchi, Aki-gun, Hiroshima-ken, Yano-machi, Japan

Continuation-in-part of application Ser. No. 700,920, Jan. 26, 1968. This application July 10, 1969, Ser. No. 860,130
Int. Cl. A47j *37/12*
U.S. Cl. 99—1 3 Claims

A method of preventing the deterioration of frying oils in a frying apparatus in which a roof-shaped or peaked hood is positioned over nearly all the surface of the oil in the frying pan in such a way that its bottom circumferential rim is submerged in the oil, thereby preventing the

infiltration of air into the hood, and the vapor generated within the hood is discharged at a flow rate of from greater than 100 kg./m.² hr. to 10,000 kg./m.² hr. through a vapor outlet having a dimension chosen for securing the desired effect. The hood used for carrying out the method is equipped with a baffle for collecting condensed material so formed that water and oily material which is condensed on the inside wall surface of the hood where it is inclined upwardly from its bottom circumferential rim will flow down along the inclined inside wall surface of the hood and will be accumulated at the bottom circumferential rim, wherefrom it can be discharged from the apparatus.

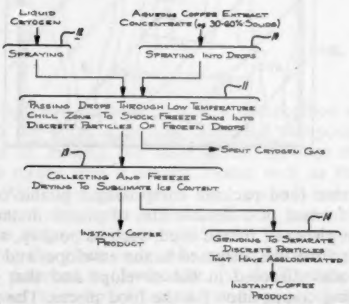


3,573,060

COFFEE EXTRACT PRODUCTS AND METHODS AND APPARATUS FOR THEIR MANUFACTURE

James W. Casten, Piedmont, and Stanley H. Shimabuku, Richmond, Calif., assignors to Hills Bros. Coffee, Inc., San Francisco, Calif.

Filed Sept. 21, 1967, Ser. No. 669,618
Int. Cl. A23f *1/08*
U.S. Cl. 99—71 7 Claims


Liquid Cryogen
Aqueous Coffee Extract Concentrate (ca 30-60% Solids)
Spraying
Spraying Into Drops
Passing Drops Through Low Temperature Chill Zone To Shock Freeze Same Into Discrete Particles Of Frozen Drops
Spent Cryogen Gas
Collecting And Freeze Drying To Sublimate Ice Content
Instant Coffee Product
Grinding To Separate Discrete Particles That Have Agglomerated
Instant Coffee Product

The coffee extract concentrate to be freeze dried is sprayed to form drops. A method and apparatus are disclosed in which a cryogen gas is sprayed into a region to create a low temperature zone for freezing the drops. The latter are caused to impinge and pass through the zone so that they are instantly shock frozen into discrete solid frozen particles. The particles are collected and freeze dried in suitable apparatus to sublimate their ice content and form a dried particle product. The dried coffee particle product is characterized by a low bulk denstiy of about 0.20 to 0.25 gram per cubic centimeter and by having a granular form, of sponge-like appearance, and being highly porous and easily aromatized. A process is disclosed for using combined freeze concentrated and evaporation concentrated coffee extracts.

3,573,061

SEEDCOAT FLOUR AND METHOD OF MAKING AND USING THE SAME

Elmer F. Glabe, Chicago, and Kazimir K. Lilien, Elmhurst, Ill., assignors to National Bakers Services, Inc., Hollywood, Fla.

No Drawing. Filed Mar. 1, 1968, Ser. No. 709,806
Int. Cl. A21d *13/04, 13/06;* A23l *1/20*
U.S. Cl. 99—90 16 Claims

An improved seedcoat flour showing reduced water absorption and improved flavor is prepared by intimately mixing seedcoats with an acid preferably 1 N to 5 N HCl, washing the seedcoats, neutralizing the excess acid, drying the seedcoats and heating them to about 325–425° F. The product is then ground into a flour. This flour may be utilized, preferably in combination with wheat flour, to manufacture a low-calorie, yeast-leavened bread. In order to obtain an acceptable bread, egg yolk or hydroxylated lecithin, and preferably a combination of the two is added to the formulation.

3,573,062

MEAT PRODUCTS

William D. Paynter and Everett V. Podebradsky, Madison, Wis., assignors to Oscar Mayer & Co., Inc., Chicago, Ill.

No Drawing. Continuation-in-part of application Ser. No. 441,864, Mar. 22, 1965. This application May 24, 1967, Ser. No. 640,837
Int. Cl. A23l *1/31*
U.S. Cl. 99—107 8 Claims

Primal cuts of meat are fabricated from coarse pieces of lean, uncooked, muscle meat weighing at least ¼ pound each. From about 10%–25% by weight of the entire mass to be uniformly blended comprises a fatty meat batter containing from about 40%–60% by weight fat. In addition to the lean meat and batter, a smaller percentage of a polyphosphate salt is incorporated. These ingredients are mixed for at least about eight minutes into a uniform blend. The polyphosphate content improves the bonding together of the chunks of lean, uncooked muscle meat while the fatty batter imparts tenderness and juiciness to the product. The uniformly blended meat mass is formed into a desired shape which may be retained in the frozen condition or which may be freeze dried. Such primal cuts as steaks, chops, roasts and loins may be made in accordance with the invention.

3,573,063

PROCESSES FOR IMPROVING THE FLAVOR, TENDERNESS, JUICINESS AND APPEARANCE OF MEATS USING NATURAL ANIMAL PRODUCTS

Beverly E. Williams, P.O. Box 299, San Mateo, Calif. 94401

No Drawing. Continuation-in-part of application Ser. No. 639,313, May 18, 1967. This application Dec. 31, 1969, Ser. No. 889,721
Int. Cl. A22c *18/00*
U.S. Cl. 99—107 3 Claims

Naturally occurring animal products are stitch pumped into animal carcasses on or adjacent to the killing floor while the freshly slaughtered carcasses are still warm and flaccid and before the completion of rigor mortis and at pressures from 15 to 110 lbs. per square inch at animal body temperatures in amounts of up to 5% by weight of the animal carcass. These naturally occurring animal products may be whole blood from the aorta or arterial system of the animal itself; whole blood from a similar animal; rehydrated blood from a similar animal; milk; reconstituted milk from dried milk and water. A more tender, juicier meat of improved appearance and flavor results when cooked.

3,573,064

RECONSTITUTABLE DRY COCONUT POWDER

Peter P. Noznick, Evanston, and Robert H. Bundus, Riverside, Ill., assignors to Beatrice Foods Co., Chicago, Ill.

No Drawing. Continuation-in-part of application Ser. No. 603,093, Dec. 20, 1966. This application Aug. 29, 1968, Ser. No. 756,316

Int. Cl. A23l *1/00*

U.S. Cl. 99—125 18 Claims

Coconut meat is removed from the shell, ground to a particle size of not over 200 microns, preferably in the presence of water, and fibrous material separated from the milk. To the milk is added an emulsifier and a protein and the milk is then dried, e.g. by spray drying. To reduce tackiness dextrin can be added prior to drying. The coconut milk can be concentrated prior to drying.

3,573,065

FREEZABLE CAKE FROSTING

Walter Arnesen, 2708 Chinquapin Oak Lane, Arlington, Tex. 76010

No Drawing. Filed Jan. 31, 1969, Ser. No. 795,732

Int. Cl. A23g *3/00*

U.S. Cl. 99—139 2 Claims

A freezable cake frosting that can be frozen, thawed and refrozen without noticeable change in smoothness and texture and without affecting its use as a cake frosting containing in combination with whipped whipping cream as a source of fat for freezability, mixed butter and solid vegetable shortening, sugar, any of the customary flavoring ingredients, glycerine to impart freezability to the frosting so that the frosting can be thawed and refrozen repeatedly without apparent change and to aid in dissolving some of the sugar.

3,573,066

SEASONING COMPOSITION COMPRISING α-AMINO ACID, PALATABLE 5'-NUCLEOTIDE AND L-GLUTAMIC ACID AND FOOD BEING MANUFACTURED TO CONTAIN THE ABOVE THREE

Tamotsu Yokotsuka, Chiba-ken, and Nobuo Saito and Akira Okuhara, Noda-shi, and Teruo Tanaka, Matsudo-shi, Japan, assignors to Kikkoman Shoyu Co., Ltd., Noda-shi, Japan

Continuation of application Ser. No. 511,390, Dec. 3, 1965. This application June 16, 1969, Ser. No. 838,008

Claims priority, application Japan, Dec. 15, 1964, 41/70,186; July 27, 1965, 40/45,079; Oct. 8, 1965, 40/61,329

Int. Cl. A23l *1/22*

U.S. Cl. 99—140 7 Claims

A seasoning composition containing L-glutamic acid or monosodium L-glutamate, a 5'-nucleotide and an α-amino acid.

3,573,067

PROCESS FOR RADIATION STERLIZING A PACKAGED PRECOOKED MEAT AND GRAVY PRODUCT

Gary W. Shults, Milford, Mass., assignor to the United States of America as represented by the Secretary of the Army

No Drawing. Filed Oct. 8, 1968, Ser. No. 766,000

Int. Cl. A23b *1/00, 1/06;* B65b *55/02*

U.S. Cl. 99—157 8 Claims

An improved process for sterilizing a precooked-meat and gravy product with high energy ionizing radiation wherein the meat and gravy are each frozen separately and kept frozen and apart during the sterilization step and subsequently allowed to thaw and mix with the container.

3,573,068

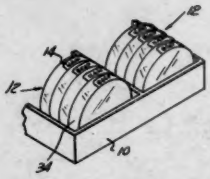
FOOD SANDWICH PACKAGE AND METHOD OF MAKING SAME

Joseph A. Polselli, 3578 E. Milwaukee, Detroit, Mich. 48211

Filed Sept. 22, 1969, Ser. No. 859,859

Int. Cl. B65b

U.S. Cl. 99—171 5 Claims



A wrapped sandwich forms a package and contains an L-shaped label between the sandwich and the wrapper so that one part of such label is visible on the face of the package but another part of the label is visible at an edge of the package. The label may be imprinted as for example by imprinting the edge exposed parts with a description of the contents of the sandwich and thus indicate the contents with visibility of such imprinting being assured even at an edge of the package when the packages are stacked with only their edges showing.

3,573,069

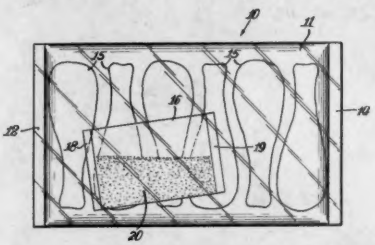
COMBINATION FROZEN FOOD AND BREADING COMPOSITION PACKAGE

Robert G. Keller, Waltham, and Denis Robinson, Medfield, Mass., assignors to CPC International Inc.

Filed Nov. 24, 1967, Ser. No. 685,358

Int. Cl. B65b *29/10*

U.S. Cl. 99—174 13 Claims



A frozen food package comprising a pliable outer envelope, formed of a flexible film of plastic material, one or more pieces of frozen food, such as poultry, sea food, meat, and the like, disposed in the envelope, and a pouch that is also disposed in the envelope and that contains a breading composition for the food pieces. The pouch is formed to be more easily rupturable than the envelope, so that it can be burst by manipulation, to release the breading, while it is still in the envelope. The breading is then applied to the food pieces by shaking the envelope.

3,573,070

PROCESSES FOR PREPARING DEHYDRATED POTATOES

John C. Smith, David A. Butler, Jerry J. Opella, and Glen D. Porter, Houston, Tex., assignors to Uncle Ben's, Inc., Houston, Tex.

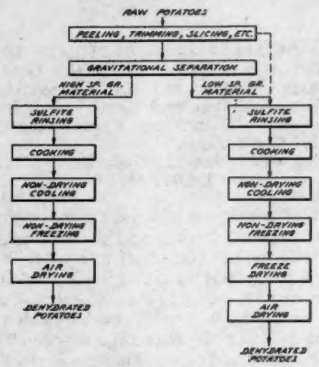
Filed Nov. 9, 1967, Ser. No. 681,814

Int. Cl. A23b *7/03;* A23l *1/12*

U.S. Cl. 99—207 5 Claims

The present invention relates to methods for dehydrating white potatoes whereby an entire potato may be processed without formation of hard, vitreous material thus promoting quick rehydration. Generally, the method

includes initial preparation of the potato such as peeling, trimming and slicing with appropriate chemical rinsing followed by cooking to gelatinize the slices; cooling, freezing; freeze drying; and air drying. In alternative em-



bodiments, prior to cooking the cut pieces may be subjected to density fractionation with isolation of the heavier pieces for further processing by cooking, cooling, freezing and air drying.

3,573,071

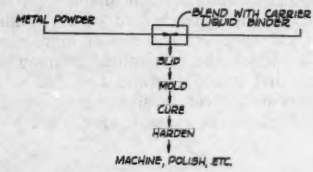
CEMENTED METAL POWDER AND FIBERS AND METHOD OF MAKING A COMPOSITE ARTICLE THEREFROM

Robert A. Horton, Chesterland, and Timothy L. Coghill, Mentor, Ohio, assignors to Precision Metalsmiths, Inc.

Filed Oct. 18, 1968, Ser. No. 768,868

Int. Cl. B28b *7/34*

U.S. Cl. 106—38.3 **19 Claims**



The disclosure pertains to a new composition of materials in the form a porous cemented composite and a method of making the same. Metal powder such as copper is mixed with a cement binder such as Portland cement. When prepared as a slip, poured and cured, the cemented metal powder has sufficient green strength to hold its shape making it suitable for casting purposes. By treating the green composite with a hardening agent, such as ammonium hydroxide, it is hardened and strengthened so as to withstand grinding, polishing, machining or other operations normally associated only with working on solid metals. A metal fiber may be mixed with or substituted for the metal powder with good results.

3,573,072

GLASS-CERAMIC ARTICLE AND METHOD

David A. Duke, 7 Theresa Drive, Corning, N.Y. 14830, and Bruce R. Karstetter, R.D. 1, Chatfield Place, Painted Post, N.Y. 14870

No Drawing. Continuation-in-part of application Ser. No. 642,318, May 31, 1967, which is a continuation-in-part of application Ser. No. 365,198, May 5, 1964. This application Mar. 18, 1968, Ser. No. 714,012

Int. Cl. C03c *3/22*

U.S. Cl. 106—39 **6 Claims**

This invention relates to the strengthening of glass-ceramic articles wherein the crystal content thereof constitutes the predominant portion and containing nepheline as the principal crystal phase, said nepheline corresponding to the formula $Na_{8-x}K_xAl_8Si_8O_{32}$ wherein x varies from about 0.25 to 4.73. The strengthening is realized through an ion exchange reaction occurring within a surface layer of the glass-ceramic article wherein potassium, rubidium, and/or cesium ions from an external source are exchanged for sodium ions in the nepheline to convert the nepheline in part at least to kalsilite and/or crystals resembling synthetic kaliophylite and cause compressive stresses to be developed in the surface layer.

3,573,073

GLASS-CERAMIC ARTICLE AND METHOD

David A. Duke, 7 Theresa Drive, Corning, N.Y. 14830; Bruce R. Karstetter, R.D. 1, Chatfield Place, Painted Post, N.Y. 14870; Stanley S. Lewek, 187 N. Place, Corning, N.Y. 14830; and Robert W. Pfitzenmaier, 32 Elm St., Canisteo, N.Y. 14823

No Drawing. Continuation-in-part of abandoned application Ser. No. 365,201, May 5, 1964. This application Mar. 18, 1968, Ser. No. 714,015

Int. Cl. C03c *3/22*

U.S. Cl. 106—39 **8 Claims**

This invention relates to the strengthening of glass-ceramic articles wherein the crystal content thereof constitutes the predominant portion and containing nepheline as the principal crystal phase. The strengthening is effected through an ion exchange reaction occurring within a surface layer of the glass-ceramic article wherein potassium ions from an external source are exchanged for sodium ions in the nepheline to convert the nepheline at least in part to kalsilite and cause compressive stresses to be developed in the surface layer.

3,573,074

HALIDE NUCLEATED GLASS-CERAMIC ARTICLES GIVING MIE LIGHT SCATTERING

David A. Duke and Thomas R. Kennedy, Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.

No Drawing. Filed Mar. 8, 1968, Ser. No. 711,534

Int. Cl. C04b *33/00*

U.S. Cl. 106—39 **2 Claims**

This invention relates to the production of glass-ceramic articles in the Li_2O—Na_2O—Al_2O_3—SiO_2 composition field which are nucleated with NaF to form beta-quartz solid solution and/or beta-spodumene solid solution as the principal crystal phase therein. These glass-ceramic articles may be translucent and, having crystals of a proper size and with an index of refraction much different from that of the residual glass, exhibit good volume scattering characteristics for visible light, thereby making them especially suitable for such applications as rear view projection screens.

3,573,075

GLASS-CERAMIC ARTICLE AND METHOD

Bruce R. Karstetter, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

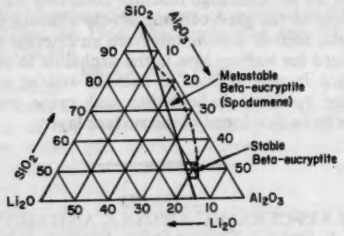
Continuation-in-part of application Ser. No. 365,035, May 5, 1964. This application May 31, 1968, Ser. No. 733,300

Int. Cl. C03c *3/22*

U.S. Cl. 106—39 **6 Claims**

This invention relates to the strengthening of glass-ceramic articles wherein the crystal content thereof comprises the predominant portion and containing thermally stable beta-eucryptite as the principal crystal phase. The strengthening is accomplished through an ion exchange reaction taking place within a surface layer of the glass-ceramic article wherein sodium ions from an external

source are exchanged for lithium ions in the beta-eucryptite, but wherein the structural nature of the crystals is essentially unchanged, to cause the development of an integral surface compression layer on the article.



3,573,076

GLASS-CERAMIC ARTICLE AND METHOD

Hermann L. Rittler, Horseheads, N.Y., assignor to Corning Glass Works, Corning, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 365,178, May 5, 1964. This application Mar. 3, 1969, Ser. No. 803,974

Int. Cl. C03c *3/22*

U.S. Cl. 106—39 **5 Claims**

This invention relates to the strengthening of glass ceramic articles wherein the crystal content thereof comprises the predominant portion and containing beta-quartz stuffed with lithium and magnesium ions as the principal crystal phase. The strengthening effect is achieved through an ion exchange process taking place within a surface layer of the glass-ceramic article wherein potassium ions from an external source are exchanged for lithium ions in the beta-quartz, but wherein the structural nature of the crystals remain essentially unchanged, to cause compressive stresses to be developed in this surface layer.

3,573,077

GLASS-CERAMIC ARTICLE AND METHOD

George H. Beall, Corning, and Bruce R. Karstetter, Painted Post, N.Y., assignors to Corning Glass Works, Corning, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 365,161, May 5, 1964. This application Feb. 4, 1969, Ser. No. 796,562

Int. Cl. C03c *3/22*

U.S. Cl. 106—39 **3 Claims**

This invention relates to the strengthening of glass-ceramic articles wherein the crystal content thereof comprises the predominant portion and containing beta-quartz stuffed with magnesium ions as the principal crystal phase. The strengthening effect is accomplished through an ion exchange process taking place within a surface layer of the articles whereby lithium ions from an external source are exchanged for magnesium ions in the beta-quartz crystals to cause compressive stresses to be set up in the surface layer.

3,573,078

GLASS COMPOSITIONS WITH A HIGH MODULUS OF ELASTICITY

James F. Bacon, Manchester, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

No Drawing. Filed Nov. 16, 1967, Ser. No. 683,465

Int. Cl. C03c *13/00, 3/04*

U.S. Cl. 106—52 **11 Claims**

Glass compositions comprising silica, alumina, and magnesia plus substantial quantities of an uncommon oxide such as lanthana, ceria, and yttria provide a formulation containing no toxic elements and capable of fiberization to produce filaments having a high modulus of elasticity.

3,573,079

METHOD OF MAKING HIGH-PURITY DEAD-BURNED MAGNESIA REFRACTORY GRAINS

Hiroji Shibasaki, Tokyo, and Kyoichi Sasaki, Akira Kubota, Yasuyoshi Oda, and Kenzi Takeo, Iwaki-shi, Japan, assignors to Shin Nihon Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

No Drawing. Filed Mar. 12, 1968, Ser. No. 712,394

Int. Cl. C04b *35/04*

U.S. Cl. 106—58 **1 Claim**

A method of making a high-purity and high-density dead-burned magnesia having a high hot compressive strength by reducing the content of free water in a filter cake of a high-purity magnesium hydroxide which is very difficultly sintered according to the conventional methods known heretofore, to a certain predetermined range, kneading and calcining the filter cake thus treated, compacting preliminarily said calcined magnesia, crushing and sizing the pre-compacted product, shaping into pellets and dead-burning the same to give the desired dead-burned magnesia.

3,573,080

CERAMIC PIGMENTS

Bernard Trevor Bell and William D. J. Evans, London, England, assignors to Johnson, Matthey & Co. Limited, London, England

Filed June 7, 1968, Ser. No. 735,337

Claims priority, application Great Britain, June 9, 1967, 26,773/67

Int. Cl. C09c *1/00*

U.S. Cl. 106—299 **14 Claims**

A zircon-based ceramic pigment prepared by calcining a mixture of zirconium oxide and silicon oxide in the presence of a chromophore and one or more mineraliser components in which the mineraliser components comprise a source of barium ions and a source of sulphate ions in addition to sources of alkali metal ions, fluoride ions and either chloride or bromide ions.

3,573,081

METHOD FOR PRODUCING PIGMENTS OF IMPROVED DISPERSIBILITY

Albert Dietz, New Martinsville, W. Va., assignor to PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Continuation-in-part of application Ser. No. 515,730, Dec. 22, 1965. This application Aug. 15, 1969, Ser. No. 850,670

Int. Cl. C08h *17/04;* **C09c** *1/36, 3/021*

U.S. Cl. 106—300 **15 Claims**

Pigmentary metal oxides, e.g., titanium dioxide, are treated with an organic amine and an organic compound containing at least one activated methylene group.

3,573,082

BIOLOGICAL SPECIMENS AND PROCESS OF PRESERVING SAME

Calvin R. Fremling, Winona, Minn., assignor to Nasco Industries, Inc., Atkinson, Wis.

No Drawing. Filed Apr. 16, 1968, Ser. No. 721,616

Int. Cl. A01n *1/00*

U.S. Cl. 117—3.0 **16 Claims**

The process of preserving animal and plant specimens involving the use of glycol and a biological specimen impregnated with a fixative and an alkylene glycol aqueous composition.

3,573,083

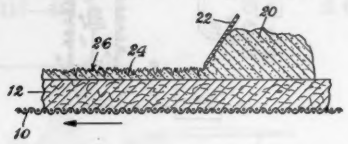
SURFACE-LAYERED FELTED FIBER SUBSTRATE AND METHOD OF PRODUCING SAME

Bernard J. Gaffney, Stillwater, Minn., assignor to Conwed Corporation, St. Paul, Minn.

Continuation-in-part of application Ser. No. 464,083, June 15, 1965. This application Mar. 28, 1969, Ser. No. 839,740

Int. Cl. B44c *1/20*; E04b *1/99*

U.S. Cl. 117—8 15 Claims



A thick overlay of paste of troweling consistency is applied to a felted substrate which substrate is either a wet board mat in process of formation or a dried felted fiberboard. Various treatments may be made to the applied layer.

3,573,084

CATHODOLUMINESCENT SCREEN FOR PRESENTING A DIFFERENTIAL COLOR DISPLAY AND METHOD OF FORMING THE SAME

Anthony V. Gallaro, Auburn, N.Y., assignor to Sylvania Electric Products Inc.

Filed Feb. 23, 1968, Ser. No. 707,511

Int. Cl. H01j *31/20*

U.S. Cl. 117—33.5 8 Claims

A cathodoluminescent screen formed of a homogeneous mixture of two electron responsive phosphors having different spectral emissions. The second phosphor, present in a greater amount, has each particle surface modified to provide a peripheral energy absorbing barrier for electron beams under a predetermined threshold energy. An electron beam of a first energy excites the first phosphor, but a beam of higher energy is required to penetrate and excite the treated phosphor. While the first phosphor is also simultaneously excited, the second phosphor spectral emission predominates the additive mixture of color emission to provide a differential color display as the energy of the electron beam is varied.

3,573,085

ABRASIVE-CONTAINING CAPSULAR COATING COMPOSITION FOR PRESSURE-SENSITIVE RECORD PAPER

Glen A. Hemstock, Princeton, N.J., assignor to Engelhard Minerals & Chemicals Corporation, Woodbridge, N.J.

No Drawing. Filed July 3, 1968, Ser. No. 742,181

Int. Cl. B41m *5/22*

U.S. Cl. 117—36.2 8 Claims

Inert, non-absorptive, rigid microscopic particles are scattered among microscopic pressure-rupturable oil-containing capsules in a coating on pressure-sensitive record sheet material.

3,573,086

FIBROUS CARBON OR GRAPHITE PRODUCTS AND METHOD OF MAKING SAME

Foraker Lambdin, Jr., Alcoa, Tenn., assignor to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Filed Dec. 10, 1968, Ser. No. 782,714

Int. Cl. B44c *1/08, 1/00*

U.S. Cl. 117—46 11 Claims

A high-strength, high-temperature, ablation-resistant composite or structure is formed of fibrous carbon or graphite bonded in a carbonized binder. The fibrous structure is formed of small, straight, carbonaceous fibers of virtually uniform length which are admixed with a carbonizable binder and sprayed onto a suitable surface. The sprayed admixture is then heated sufficiently to carbonize or graphitize the binder for forming a high-strength, carbonaceous structure of desired configuration. The fibers in the carbonaceous structure are randomly oriented and uniformly dispersed to provide the fibrous structure with the aforementioned properties.

3,573,087

FABRIC SOFTENER

James Douglas Barnhurst, Millington, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Filed Nov. 17, 1967, Ser. No. 683,815

Int. Cl. D06m *13/28*

U.S. Cl. 117—47 7 Claims

The rinse cycle fabric softener additive and a process for softening textile fabrics therewith, wherein the fabric softener additive comprises a compound of the formula:

$$\left[\begin{matrix} R_n \\ | \\ P-(R_1OH)_{(4-n)} \end{matrix}\right]^{+}X^{-}$$

wherein R is a C_8–C_{20} alkyl; R_1 is a lower alkyl; n is an integer of 1, 2 or 3, and X is a halogen.

3,573,088

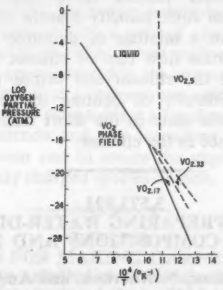
PREPARATION OF VANADIUM DIOXIDE

John B. MacChesney, Stirling, and John F. Potter, New Providence, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.

Filed July 27, 1967, Ser. No. 656,419

Int. Cl. C23f *7/02*

U.S. Cl. 117—62 1 Claim



Vanadium pentoxide can be annealed to stable vanadium dioxide at temperatures from 400 to 1200° C. under an atmosphere having an oxygen partial pressure from 10^{-4} to 10^{-28} atmospheres. This technique is applicable on vanadium pentoxide films produced by evaporating vanadyl trichloride into carbon dioxide in the presence of a substrate, or on films produced by the physical application of already formed vanadium pentoxide onto ceramic substrates.

3,573,089

METHOD OF MANUFACTURING SCREEN CLOTHS FOR PAPERMAKING

Takuo Tate, Tokyo, Japan, assignor to Kabushiki Kaisha Sayama Seisakusho, Tokyo, Japan

No Drawing. Filed Oct. 12, 1967, Ser. No. 674,743

Claims priority, application Japan, Nov. 15, 1966, 41/74,636

Int. Cl. D21f *1/10*

U.S. Cl. 117—72 16 Claims

A novel method of manufacturing a papermaking screen cloth having a hydrophilic coating is described. The method consists of applying to the surface of the warps and wefts of the screen cloth a solution of at least one water soluble organic compound containing at

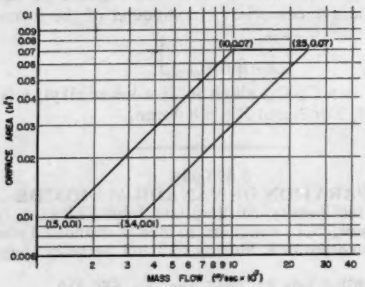
least two hydrophilic groups, at least one of the hydrophilic groups containing an active hydrogen atom, and a condensing agent capable of reacting with the active hydrogen of the hydrophilic groups, whereby the condensing agent reacts with the hydrophilic groups and part of the hydrophilic groups remains unreacted and forms a hydrophilic film on the surface of the screen cloth.

3,573,090

METHOD OF APPLYING A PLASMA SPRAY COATING

John D. Peterson, North Grafton, Mass., assignor to Avco Corporation, Cincinnati, Ohio

Filed Dec. 9, 1968, Ser. No. 782,095
Int. Cl. B44d *1/097*
U.S. Cl. 117—93.1 **7 Claims**



There is described herein a method of obtaining a high-quality, high-density plasma spray deposited coating through the use of high velocity plasma effluent, preferably formed from a mixture of diatomic and a monatomic gas. The mass flow rate of effluent and the cross sectional area of the effluent exit orifice is adjusted to overcome the difficulty of heating the material being sprayed to a plastic state in the short time that the material is in residence in the effluent.

3,573,091

METHOD OF PREPARING WATER-DISPERSIBLE SOFTENER COMPOSITIONS AND PRODUCTS THEREBY

Milton M. Waldman, Northbrook, and Andrea E. Mariahazy, Westchester, Ill., assignors to Armour and Company, Chicago, Ill.

No Drawing. Continuation-in-part of application Ser. No. 367,193, May 13, 1964. This application Nov. 13, 1967, Ser. No. 682,596
The portion of the term of the patent subsequent to Dec. 5, 1984, has been disclaimed
Int. Cl. B05c *11/00;* **D06m** *13/46*
U.S. Cl. 117—100 **5 Claims**

Powdered quaternary softeners prepared by spraying a solvent solution of the quaternary on a water soluble carrier while agitating the carrier so as to coat the carrier particles without appreciable chemical reaction between the carrier and the quaternary.

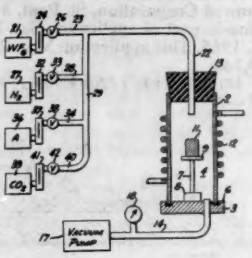
3,573,092

METHOD FOR INTRODUCING CARBON INTO CHEMICAL VAPOR DEPOSITED REFRACTORY METAL, AND RESULTING PRODUCT

Robert A. Holzl, La Canada, and Richard D. Hahn, Canoga Park, Calif., assignors to Fansteel Inc., North Chicago, Ill.

Filed Apr. 1, 1968, Ser. No. 718,019
Int. Cl. C23c *11/00*
U.S. Cl. 117—107.2 **12 Claims**

Conventional chemical vapor deposition technique is employed to introduce a trace amount of carbon into a refractory metal, such as tungsten, followed by heat treatment of the metal, to stabilize the grain structure,



strengthen the metal, and prevent growth of the grains when the metal is subjected to a high temperature environment.

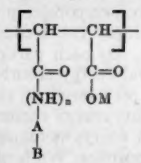
3,573,093

METHOD FOR THE ANTISTATIC TREATMENT OF PLASTIC FILMS

Koji Oshibuchi, Masayoshi Mayama, Masao Ishihara, and Osakazu Sugino, Tokyo, Japan assignors to Konishiroku Photo Industry Co., Ltd.

No Drawing. Filed Mar. 8, 1968, Ser. No. 711,498
Claims priority, application Japan, Mar. 15, 1967, 42/15,870
Int. Cl. B32b *27/08*
U.S. Cl. 117—138.8 **5 Claims**

A plastic film is treated with a copolymer. The copolymer contains in the principal chain the recurring unit



wherein A is a substituted phenylene, an unsubstituted phenylene, a naphthalene radical or a radical having the formula—CHR, R being hydrogen, a substituted alkyl, an unsubstituted alkyl or an aryl group, B is $—SO_3M$, $—SO_2M$, —COOM, $—PO_3M_2$ or $—PO_2M_2$, M is a cation and n is 1 or 2. To produce the above copolymer, a copolymer comprising as its copolymerization component an α,β-ethylenically unsaturated monomer and a maleic acid derivative is reacted with a compound which is capable of forming with the maleic acid derivative an acid amide linkage having at its terminal end a pendant acidic group.

3,573,094

FIBROUS SUBSTRATE COATED WITH A SELF-EMULSIFIABLE POLYMER

Harry D. Anspon, Sewickley, Pa., and Jack Hurst, Houston, Tex., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

No Drawing. Continuation of application Ser. No. 248,297, Dec. 31, 1962, which is a continuation-in-part of application Ser. No. 131,108, Aug. 14, 1961. This application Apr. 9, 1969, Ser. No. 814,856
The portion of the term of the patent subsequent to Dec. 30, 1986, has been disclaimed
Int. Cl. B32b *27/04, 27/12*
U.S. Cl. 117—140 **13 Claims**

A fibrous substrate containing a coating of a water-insoluble ethylene polymer, said ethylene polymer containing from 0.01 to 0.5 mol of an alkyl acrylate comonomer per mol of contained ethylene, at least a portion of the pendant acrylate groups having been converted to the acrylamide, carboxyl and/or carboxylate salt form.

3,573,095

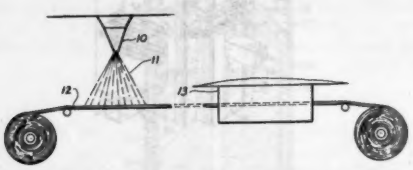
EPOXIDIZED PERFLUOROALKYLAMIDE WATER- AND OIL-REPELLENCY AGENTS

Hans H. Stockmann, Plainfield, and Dilip K. Ray-Chaudhuri and Carmine P. Iovine, Somerset, N.J., assignors to National Starch and Chemical Corporation, New York, N.Y.

Continuation-in-part of abandoned application Ser. No. 622,625, Mar. 13, 1967. This application Oct. 20, 1969, Ser. No. 867,549

Int. Cl. D06m *15/52*; C07d *1/04*; C08g *23/12*

U.S. Cl. 117—161 2 Claims



Compositions of matter comprising the products resulting from the reaction of an epihalohydrin with the reaction product of a fluoro carboxylic acid and a polyamine. The resulting epoxidized amide-amine fluoro compounds impart both water and oil repellency to a wide variety of substrates.

3,573,096

SILANE METHOD FOR MAKING SILICON NITRIDE

Nigel C. Tombs, Stow, Mass., assignor to Sperry Rand Corporation, Great Neck, N.Y.

No Drawing. Filed June 23, 1965, Ser. No. 466,454

Int. Cl. C27c *11/00*

U.S. Cl. 117—201 3 Claims

A method for the production of a layer of silicon nitride on a substrate material by placing the substrate in a reactor chamber at a temperature in the range from about 600° C. to about 1000° C. and passing silane and ammonia over the substrate.

3,573,097

METHOD OF MANUFACTURING A PHOTOSENSITIVE DEVICE

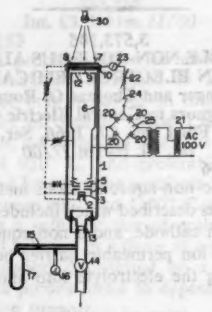
Shigeo Tsuji, Fujisawa-shi, Japan, assignor to Tokyo-Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed May 20, 1968, Ser. No. 730,554

Claims priority, application Japan, May 23, 1967, 42/32,288

Int. Cl. H01j *31/28*

U.S. Cl. 117—211 5 Claims



A method of manufacturing a photosensitive device which comprises the step of bombarding under vacuum electron beams of 10 to 1,000 ev. onto the surface of a lead monoxide layer which has been subjected to after-treatment by carrying out an electrical discharge through an oxygen-containing atmosphere thereby to remove excess oxygen atoms deposited on the surface of the lead monoxide layer.

3,573,098

ION BEAM DEPOSITION UNIT

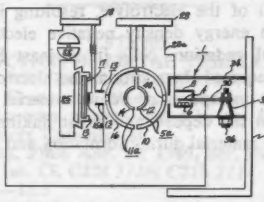
James W. Bieber, Douglas E. Fishkin, and Allan R. Wolter, Seattle, and Darrell M. Scattergood II, Bellevue, Wash., assignors to The Boeing Company, Seattle, Wash.

Continuation-in-part of application Ser. No. 438,604, Mar. 10, 1965. This application May 9, 1968, Ser. No. 740,789

(Filed under Rule 47(a) and 35 U.S.C. 116)

Int. Cl. C23c *13/00, 13/12*

U.S. Cl. 117—212 4 Claims



An ion beam deposition apparatus wherein a supply of ions is generated and purified in an ion source; extracted and accelerated from the ion source by a first pair of concentric hemispherical electrodes; focused into an ion beam by a second pair of concentric hemispherical electrodes and selectively deflected by a pair of planar electrostatic deflection plates to form a circuit pattern upon a substrate. The ions are generated in the ion source by heating a deposition material to a temperature sufficient to initiate vaporization and by establishing a localized arc discharge between an electrode and the deposition material to increase vaporization and to ionize the vaporized atoms to create a uniformly charged species of ions.

3,573,099

PROCESS FOR MAKING GARNET FILMS

Eugene B. Moore and Daniel A. Nepela, Saratoga, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

No Drawing. Filed Dec. 22, 1969, Ser. No. 887,352

Int. Cl. C04b *35/16, 35/50*

U.S. Cl. 117—234 6 Claims

Crack free garnet films are deposited on a glass substrate. The glass substrate must have a low lead content and a thermal expansion coefficient within the range 85×10^{-7} to 105×10^{-7} and an annealing temperature of above 750° C. $Gd_3Fe_5O_{12}$ is deposited in a plurality of layers, the first one of which is less than 0.25 micron thick. The first layer is heated to complete crystallization prior to depositing any additional layer. There is a final heating to complete crystallization after the last deposition.

3,573,100

RECONSTITUTION OF ELECTRODES

Henri Bernard Beer, Vogelenzangstraat 33, Kalmthout, Belgium

Filed Feb. 26, 1969, Ser. No. 802,676

Claims priority, application Great Britain, Feb. 28, 1968, 9,706/68

Int. Cl. C22b *11/00*; C23g *1/28*

U.S. Cl. 134—3 5 Claims

In a method of cleaning anodes comprising a conductive base coated with noble metals or chemical com-

pounds thereof, the anodes are treated with a melt containing a basic material at a specific temperature and in the presence of an oxidant or oxygen.

3,573,101

METHOD FOR PRODUCING A CADMIUM ELECTRODE FOR NICKEL CADMIUM CELLS

Richard L. Beauchamp, Madison, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.

Filed Jan. 7, 1970, Ser. No. 1,134

Int. Cl. H01m *35/30*

U.S. Cl. 136—76 **7 Claims**

The electrolytic deposition of cadmium hydroxide in a porous electrode structure is carried out within the critical temperature range of from about 85° C. to the boiling point of the electrolyte, resulting in the formation of high energy density negative electrodes for alkaline nickel cadmium cells in at least half the time previously required. In addition, the electrodes exhibit a high percent utilization of active material subsequently formed from the deposit and resist flaking or shedding of the active material during formation and cell use.

3,573,102

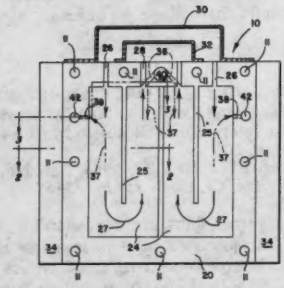
FUEL CELL GAS MANIFOLD SYSTEM

John W. Lane, John H. Hirschenhofer, and Raymond L. Gelting, Manchester, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Nov. 7, 1966, Ser. No. 592,420

Int. Cl. H01m *27/02*

U.S. Cl. 136—86 **13 Claims**



A manifold system for distributing the flow of reactant gases through a fuel cell to prevent a drying out of the cell. The fuel cell includes a fuel electrode, an oxidant electrode, and an aqueous electrolyte retentive matrix located between the electrodes. The manifold system includes a gas chamber for distributing the flow of at least one of the reactant gases over the surface of its electrode in a circuitous path between the inlet and outlet of the chamber. The inlet and outlet ends of the chamber are located closely adjacent to each other with respect to the path followed by the gas flowing through the chamber so that the driest and wettest regions of the cell near the inlet and outlet ends, respectively, of the chamber are close together to prevent a drying-out of the cell.

3,573,103

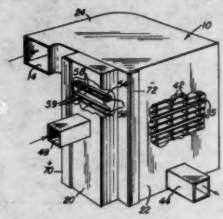
GILL OR SEA WATER FUEL CELL

Clinton E. Brown, Silver Spring, Md., assignor to Hydronautics, Incorporated, Laurel, Md.

Filed Oct. 23, 1965, Ser. No. 503,021

Int. Cl. H01m *27/00*

U.S. Cl. 136—86 **5 Claims**



A fuel cell utilizing sea water as the cell's supply of oxidant reactant and as the electrolyte for the cell.

3,573,104

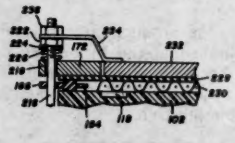
FUEL CELL UNIT WITH NOVEL FLUID CONFINING AND DIRECTING FEATURES

Charles W. Snyder, Jr., Beverly, and Arnold D. Thumim, Brighton, Mass., assignors to General Electric Company

Filed May 9, 1968, Ser. No. 727,790

Int. Cl. H01m *27/00*

U.S. Cl. 136—86 **3 Claims**



A fuel battery is disclosed provided with apertured reactant and electrolyte gaskets. The electrolyte frames are provided with notched baffle fingers to uniformly distribute fluid while the reactant frames are provided with stacked screens having offset apertures. The frames making up the fuel cell unit are held assembled by rigid frames compressively urging the peripheral portions of the gaskets and frames into engagement while not compressing the central portion.

3,573,105

RECHARGEABLE NON-AQUEOUS ALKALI METAL-HALOGEN ELECTROCHEMICAL CELLS

Joseph L. Weininger and Thomas O. Rouse, Schenectady, N.Y., assignors to General Electric Company

No Drawing. Filed Oct. 27, 1966, Ser. No. 595,293

Int. Cl. H01m *27/00*

U.S. Cl. 136—86 **7 Claims**

A rechargeable non-aqueous alkali metal-halogen electrochemical cell is described which includes an alkali metal anode, a halogen cathode, and a non-aqueous electrolyte. The cell has an ion permeable barrier between the electrodes separating the electrolyte into anolyte and catholyte reservoirs.

ERRATUM

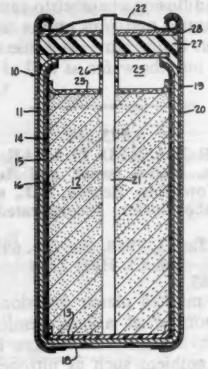
For Class 136—122 see:
Patent No. 3,573,122

3,573,106

ELECTRIC BATTERY HAVING A LAMINATED SEMIPERMEABLE BARRIER/ABSORBENT SEPARATOR

Martin H. Johnson, Verona, and Duane M. Larsen and Carrol G. Saxe, Madison, Wis., assignors to ESB Incorporated

Filed Nov. 1, 1968, Ser. No. 772,776
Int. Cl. H01m 3/02
U.S. Cl. 136—131 11 Claims



An electric battery having a laminated semipermeable barrier/absorbent separator to provide improved cycle life and/or improved high temperature and long duration storage capability. The battery employs a cathode material which is appreciably soluble in the electrolyte, and the separator is positioned in such a manner that the semipermeable barrier (e.g. cellophane) is in contact with the cathode material and the absorbent material is in contact with the anode. The absorbent material is specially prepared from a vinyl acetate-ethylene copolymer binder material blended with a gelling agent (e.g. starch and flour). The barrier material prevents cathode active material from migrating to the anode, and the absorbent material absorbs the battery electrolyte and immobilizes it in contact with the anode surface.

3,573,107

METHOD OF MANUFACTURE OF SOLID ELECTROLYTES FOR FUEL CELLS

René A. Pâris, Lyon, and Guy Pâris, Le Harve, Seine-Maritime, France, assignors to Societe Anonyme dite: Compagnie Francaise de Raffinage, Paris, France

No Drawing. Filed Dec. 20, 1968, Ser. No. 785,763
Claims priority, application France, Dec. 20, 1967, 133,189
Int. Cl. H01m 11/00
U.S. Cl. 136—153 16 Claims

A method of preparing of solid electrolytes for fuel cells based on zirconia stabilized in the cubic phase, which consists of first preparing an intimate mixture or a mixed complex of organic zirconyl salts and salts of stabilizing metals, decomposing said salts by pyrolysis between 300° and 950° C. and preferably between 300° and 450° C., and bringing the pyrolysis products up to a temperature between 900° and 1100° C. to crystallize said solid solution at a sufficient size of grain, and then projecting said solid solution in a flame at a suitable granular size, on to a support constituted by a porous ceramic material or by a porous metal to deposit a thin layer of electrolyte on said support.

The zirconyl salts and the salts of the other stabilizing metals are salts of carboxylic acids (formates, acetates, etc.) or of polyhydroxy-carboxilic acid (tartrates, citrates, mandelates, etc.).

3,573,108

PURIFICATION OF GERMANIUM

Robert N. Hall, Schenectady, N.Y., assignor to General Electric Company

Filed Oct. 30, 1968, Ser. No. 772,044
Int. Cl. C22b 41/00
U.S. Cl. 148—1.6 12 Claims

Germanium having a purity of the order of 10^{12} uncompensated electrically active impurity atoms per cubic centimeter thereof is processed to produce hyperpure germanium having a purity, represented by the order of 10^{10} uncompensated impurity atoms per cubic centimeter thereof, by melting commercially available, high-purity germanium of the aforementioned impurity level in a reaction chamber wherein the molten germanium has a substantial portion of the surface thereof in contact with the ambient atmosphere and growing a crystalline ingot therefrom by fractional crystallization while pure dry nitrogen is passed through the reaction chamber.

3,573,109

PRODUCTION OF METAL RESISTANT TO NEUTRON IRRADIATION

Ira S. Levy, Kennewick, Wash., assignor to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Filed Apr. 24, 1969, Ser. No. 819,527
Int. Cl. C22f 1/10; C21b 7/14
U.S. Cl. 148—11.5 9 Claims

A process is disclosed for producing a metal which is highly resistant to damage by neutron irradiation. Austenitic stainless steels or nickel-base alloys, which also contain suitable carbide-formers such as niobium (columbium), titanium, tantalum, or zirconium, are subjected to a series of thermal and mechanical treatments, namely:

(1) solution heat treatment at a temperature sufficiently high to place in solid solution substantially all the dissolvable carbides,
(2) quenching at a controlled rate,
(3) plastic deformation at or near room temperature, and
(4) plastic deformation at high temperature.

3,573,110

PROCESS FOR OBTAINING HIGH CONDUCTIVITY COPPER ALLOYS

Elmars Ence, Hamden, Conn., assignor to Olin Corporation

No Drawing. Continuation-in-part of application Ser. No. 581,713, Sept. 26, 1966. This application May 16, 1968, Ser. No. 729,503
Int. Cl. C22f 1/08
U.S. Cl. 148—12.7 9 Claims

An improved process for obtaining high conductivity copper base alloys in which the alloy is heated at 700 to 1000° C. for at least 30 minutes, hot rolled, cooled to below 300° C. at a rate of greater than 550° C./hour, cold rolled below 200° C. and then aged at 250 to 575° C. for at least one hour.

3,573,111

HIGH LUBRICITY CORROSION RESISTANT THREADED FASTENER AND METHOD

Raymond L. Thurston, Dearborn, Mich., assignor to Microdot Inc., Greenwich, Conn.

No Drawing. Filed Sept. 6, 1968, Ser. No. 774,555
Int. Cl. C23f 7/10
U.S. Cl. 148—6.15 8 Claims

A method of preparing a high lubricity corrosion resistant threaded fastener or other coated substrate product comprising the steps of: (a) cleaning the substrate, for example in a soap bath, (b) water rinsing, (c) applying an aqueous acidic metallic phosphate coating solution to

the substrate, (d) applying a corrosion resistant oil to the substrate, and (e) applying a mixture of solid lubricant particle dispersion and water soluble corrosion resistant oil to the substrate; and, the coated product formed by the above method.

3,573,112

MAGNETIC SHEETS WITH (100) [*hkl*] TEXTURE

Robert G. Aspden, Export, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

No Drawing. Continuation-in-part of application Ser. No. 372,693, June 4, 1964. This application Nov. 6, 1967, Ser. No. 681,016

Int. Cl. H01f *1/16*

U.S. Cl. 148—31.55 **8 Claims**

Iron or iron-base alloy sheet having a composition in which the gamma phase or face centered lattice structure predominates at elevated temperature while the alpha phase or body centered cubic lattice structure predominates at lower temperature levels, the sheet being composed of a high proportion of alpha phase grains exhibiting a (100) [*hkl*] texture.

3,573,113

METHOD OF PREPARING A P-N JUNCTION

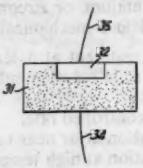
Yasuo Nannichi, Tokyo, Japan, assignor to Nippon Electric Company Limited, Tokyo, Japan

Filed Nov. 7, 1967, Ser. No. 681,152

Claims priority, application Japan, Nov. 19, 1966, 41/76,069

Int. Cl. H01l *7/36*

U.S. Cl. 148—191 **5 Claims**



A method is provided for preparing p-n junctions in semiconductor wafers wherein an impurity in the wafer is caused by thermal treatment to diffuse outward so that the impurity concentration at or near the surface of the wafer is decreased relative to the higher bulk impurity concentration. A p-n junction is formed in the semiconductor wafer in such a manner that the bottom part of said p-n junction may reach a region of said semiconductor wafer where the outdiffusion in regard to the impurity concentration is no more effected.

3,573,114

ELECTROLUMINESCENT JUNCTIONS BY CO-DOPING WITH MORE THAN ONE ELEMENT

John C. Marinace, Yorktown Heights, N.Y., assignor to the United States of America as represented by the Secretary of the Army

No Drawing. Filed Jan. 9, 1969, Ser. No. 790,158

Int. Cl. H01l *7/44*

U.S. Cl. 148—189 **5 Claims**

This invention relates to a method of fabricating a light emitting semiconductor junction device. The method encompasses diffusing zinc and cadmium together into n-type gallium-arsenide wafers that are sealed in a silica tube or ampule with approximately 5 mg. Cd_3As_2 or $CdAs_2$ plus approximately 5 mg. of $ZnAs_2$. For diodes fabricated by this method of co-diffusion, the silica tube is heated to 750° C. for 4 hours then to 850° C. for .75 hour. For lasers fabricated by this co-diffusion, the tube is heated to 750° C. for 16 hours and then to 850° C. for 1.25 hours.

3,573,115

SEALED TUBE DIFFUSION PROCESS

Benjamin Topas, Santa Monica, Calif., assignor to International Rectifier Corporation, Los Angeles, Calif.

Filed Apr. 22, 1968, Ser. No. 723,208

Int. Cl. H01l *7/36*

U.S. Cl. 148—189 **2 Claims**

A stack of semiconductor wafers is placed in a diffusion boat which is loaded into a quartz tube. The tube is filled with a predetermined volume of gas containing doping agents alone, or doping agents and oxygen, and the tube is sealed. The tube is then heated at a relatively low temperature in a diffusion chamber to cause initial decomposition of the doping materials on the wafers, and thereafter at a higher temperature to cause diffusion of the doping materials into the wafer as well as oxidation of the wafer surface.

3,573,116

PROCESS FOR MASKED PLANAR DIFFUSIONS

Barry G. Cohen, Haifa, Israel, and Robert Lilienthal, Washington Township, Bergen, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 3, 1968, Ser. No. 695,469

Int. Cl. H01l *7/34*

U.S. Cl. 148—187 **6 Claims**

A process for masked planar diffusion of gallium into the unmasked portion of a bulk semiconductor is described in which the diffusion occurs in a completely water-free inert ambient such as nitrogen gas. A quartz box diffusion capsule is used with a conventional diffusion furnace in which the nitrogen circulates throughout the process.

3,573,117

METHOD OF IMPROVING STRESS CORROSION RESISTANCE OF ALUMINUM ALLOYS

Franklin H. Cocks, Waltham, Mass., assignor to Tyco Laboratories Inc., Waltham, Mass.

Filed Nov. 21, 1968, Ser. No. 777,745

Int. Cl. C21d *1/50*; C22f *1/04*

U.S. Cl. 148—159 **7 Claims**

Method of heat treating aluminum base alloys of the zinc-magnesium copper series to attain improved resistance to stress corrosion. The method comprises quenching the alloy following solution treatment in a liquid held at a temperature of between about 230° F. and about 260° F. followed by a two step aging treatment the first of which is conducted at a temperature between about 230° F. and about 260° F. for a period of between about 20 hours and 30 hours and the second aging step is conducted between about 310° F. and 340° F.

3,573,118

METHODS AND APPARATUS FOR HANDLING WIRE ROD

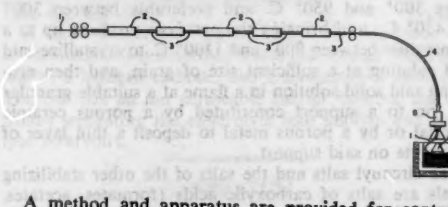
Friedrich Kocks, Dusseldorf, Germany, assignor to Friedrich Kocks, Dusseldorf, Germany

Filed Mar. 28, 1969, Ser. No. 811,492

Claims priority, application Germany, Mar. 13, 1969, P 17 58 070.0

Int. Cl. C21d *9/52*

U.S. Cl. 148—156 **10 Claims**



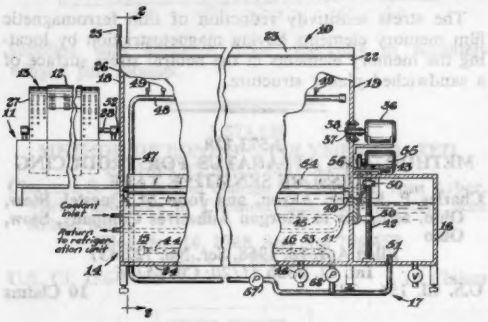
A method and apparatus are provided for controlled cooling of wire rod from a hot rolling mill to provide grain structure suitable for subsequent drawing by the

steps of cooling said rod to a temperature between 930° F. and 1110° F. on a cooling line and holding said cooled rod on a preheated reel at about 930° F. until the temperature of the rod has stabilized.

3,573,119
MACHINE AND METHOD FOR ETCHING CURVED PLATES

Marvin H. Fishaber, Saginaw, Mich., and Johannes F. Laimbock, Rotterdam, Netherlands, assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 3, 1969, Ser. No. 807,165
(Filed under Rule 47(a) and 35 U.S.C. 116)
Int. Cl. B41n *3/02*; C23f *1/02*
U.S. Cl. 156—14 **12 Claims**

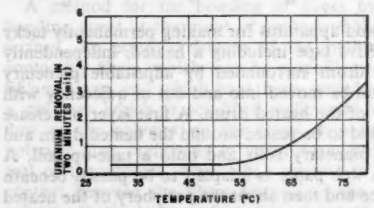


A process and apparatus for powderless etching by paddle means of curved printing plates which includes an additional array of spray nozzles at each side of the plate holder.

3,573,120
URANIUM ETCHANT AND METHOD

Forrest B. Waldrop, Powell, and Max J. Bezik, Oak Ridge, Tenn., assignors to the United States of America as represented by the United States Atomic Energy Commission

Filed Sept. 6, 1968, Ser. No. 757,977
Int. Cl. C23d *3/00*; C23g *1/10*
U.S. Cl. 156—18 **2 Claims**



Metallic uranium and alloys thereof are provided with uniformly etched surfaces for facilitating the reception of adherent protective coatings. The etchant consists of an aqueous solution of either ferric chloride or ferric chloride and nickel chloride.

3,573,121
METHOD OF PRODUCING SUEDE-LIKE ARTIFICIAL LEATHERS

Kazuo Fukada, 851 2-chome, Aza-Nagaoyama, Hyogo, Japan; and Hiroshi Okamoto, 12–30 Shimo-Chujo-cho, Ibaragi-shi; and Yoshihiko Numata, 4–1 Tsukimi-cho, Takatsuki-shi, both of Osaka, Japan

No Drawing. Filed Apr. 8, 1968, Ser. No. 719,713
Claims priority, application Japan, Apr. 6, 1967, 42/22,045
Int. Cl. B32b *5/18*
U.S. Cl. 156—77 **6 Claims**

A process for producing suede-like artificial leathers which comprises coating a solution of a polymer onto a fibrous base material, superimposing a flock on a carrier sheet on the polymeric coating layer, subjecting the resulting composite sheet to treatment with a coagulation liquid and, after coagulation of the coating layer into a microporous structure, removing the carrier sheet from the flocked sheet material.

3,573,122
PREPARATION OF CONDUCTIVE MATERIALS

Franciszek Olstowski, Freeport, Tex., and James Lawrence Amos and Herbert H. Bauss, Midland, Mich., and Oliver Osborn and John D. Watson, Sr., Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

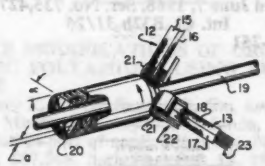
No Drawing. Continuation of application Ser. No. 620,557, Mar. 3, 1967, which is a continuation of application Ser. No. 441,894, Mar. 22, 1965, both now abandoned. This application Aug. 23, 1968, Ser. No. 755,006
Int. Cl. H01m *13/04*
U.S. Cl. 136—122 **6 Claims**

This invention provides a method for rendering conductive materials which are normally substantially nonconductive by admixing with the non-conductive material sufficient vermicular expanded graphite having a bulk density of less than about 2 lbs. per cubic foot to provide an amount of from 0.05 to 40 percent by weight of graphite based on the total weight of the mixture. One of the illustrated utilities of this invention is to provide a highly conductive battery cathode composition.

3,573,123
COMPOSITE HIGH TEMPERATURE RESISTANT MATERIAL AND METHOD OF FABRICATION

Robert A. Siegel, Los Gatos, and John L. Jennings, Cupertino, Calif., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed May 11, 1966, Ser. No. 549,334
Int. Cl. B32b *7/02*; B65h *81/04*; F16l *9/16*
U.S. Cl. 156—171 **5 Claims**



A composite heat resistant element is formed by winding composite tapes about a mandrel, each tape having discrete portions of carbon and silica. To resist delamination of the body at the interface between the carbon and silica, the interface is interlocked within a zone within the body rather than along a continuous line.

3,573,124
PROCESS FOR THE MANUFACTURE OF MULTI-LAYER, COLD-MOLDABLE AND THERMOFORMABLE COMPLEX OR SANDWICH

Bernard Rudloff, Marckolsheim, France

Filed Apr. 20, 1967, Ser. No. 632,363
Claims priority, application France, Oct. 17, 1966, 8,721
Int. Cl. B31f *1/00*
U.S. Cl. 156—224 **6 Claims**

A method of manufacture of cold-moldable thermoformable sound-proofing complexes by associating with complexes formed by surfacing of bituminous products

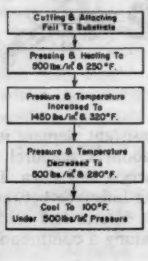
with layer of unwoven felts charged with different resins, a sheet of coldshapable impregnated cardboard including sheet metal, lead or aluminum thereby imparting to the

complex a cold-shaping property, while retaining rigidity after cold-shaping permitting the subsequent passage through a furnace.

3,573,125
EXTRUSION-COATING OF ETHYLENE-VINYL ACETATE COATINGS
Bentley W. Elliott, Milwaukee, Wis., assignor to Milprint, Inc., Milwaukee, Wis.
Continuation-in-part of application Ser. No. 639,381, May 18, 1967. This application Apr. 29, 1968, Ser. No. 734,828
Int. Cl. B29b *3/00*
U.S. Cl. 156—244 **9 Claims**

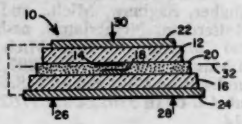
An extrusion-coating process for the application of coatings of wax and ethylene-vinyl acetate copolymers, or the copolymers by themselves, onto substrate films, instead of the usual hot melt or solvent coating techniques for the application of such coatings. An especially effective primer for use with the coatings is also shown.

3,573,126
METHODS OF MANUFACTURING ELECTRICAL CIRCUITS
Jack I. Kougel, Leesburg, Ind., assignor to GTI Corporation
Filed June 7, 1968, Ser. No. 735,427
Int. Cl. B32b *31/26*
U.S. Cl. 156—251 **3 Claims**


Cutting & Attaching Foil To Substrate
Pressing & Heating To 500 lbs./in² & 250°F.
Pressure & Temperature Increased To 1450 lbs./in² & 320°F.
Pressure & Temperature Decreased To 500 lbs./in² & 280°F.
Cool To 100°F. Under 500 lbs./in² Pressure

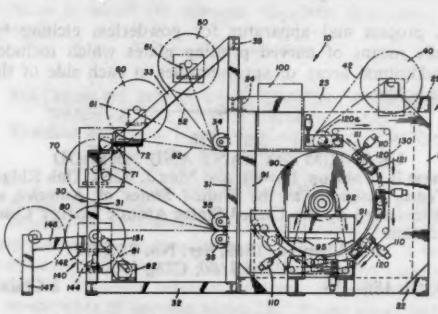
A method of manufacturing current conducting circuitry on a non-conductive base is provided which includes the steps of applying heated cutting edges of a selected configuration to a metal foil superimposed over an insulating backing strip to shear a circuit and press the sheared edge against the strip adhering the edge to the strip, transferring the assembly to a press, subjecting the assembly to a first temperature and pressure to remove gases from between the foil and strip, to a second higher temperature and pressure to adhere the foil to the backing strip, and finally to a third temperature and pressure substantially equal to the first followed by cooling under said third pressure.

3,573,127
STRESS SENSITIVITY REDUCTION OF MAGNETOSTRICTIVE FILM ELEMENTS
Marvin R. Root, St. Paul, and Charles H. Tolman, Bloomington, Minn., assignors to Sperry Rand Corporation, New York, N.Y.
Filed July 28, 1967, Ser. No. 656,912
Int. Cl. H01f *1/37*
U.S. Cl. 156—278 **4 Claims**



The stress sensitivity reduction of thin ferromagnetic film memory elements having magnetostriction by locating the memory elements in the neutral stress surface of a sandwiched planar structure.

3,573,128
METHOD AND APPARATUS FOR PRODUCING PRESSURE SENSITIVE TAPE
Charles P. Kettler, Akron, and John M. Questel, Stow, Ohio, assignors to Morgan Adhesives Company, Stow, Ohio
Filed Apr. 18, 1968, Ser. No. 722,437
Int. Cl. B32b *31/20*; C09j *5/06*
U.S. Cl. 156—283 **10 Claims**

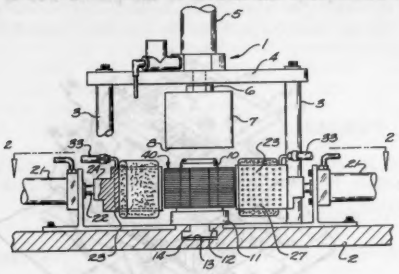


A method and apparatus for making permanently tacky pressure sensitive tape including a heated, independently driven, main drum surrounded by adjustable planetary rolls which can be moved into and out of adjacency with the periphery of the heated drum. A first layer of release paper is adapted to be passed around the heated drum and beneath said planetary rolls and onto a take-up roll. A layer of open web paper is adapted to be passed beneath a power source and then about the periphery of the heated drum on top of the first layer of release paper. A second layer of release paper is adapted to be passed around the periphery of the heated drum on top of the open web paper after the depositing of the powder thereon, the heated drum and the planetary rolls being driven independently of each other and the planetary rolls serving to planish the laminate and prevent nip buildup.

3,573,129
STATOR CORE ASSEMBLING APPARATUS
Albert E. Zeis, St. Louis, Mo., assignor to Emerson Electric Co., St. Louis County, Mo.
Filed Feb. 13, 1969, Ser. No. 798,983
Int. Cl. B32b *31/20*; B65c *11/04*
U.S. Cl. 156—299 **9 Claims**

Liquid adhesive is applied to the outer surface of a stack of laminations on a mandrel, by means of pads soaked in adhesive. The adhesive is wicked radially from the pads between the facing surfaces of the laminations.

Thereafter, the stack is clamped under predetermined axial pressure and the adhesive is cured. The pads are

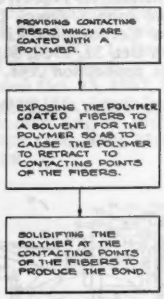


supplied with adhesive from reservoirs in arcuately winged pad mounts.

3,573,130
METHOD OF BONDING POLYMER-COATED FIBERS BY SOLVENT ACTION

Clarence S. Vinton and George B. Moravek, Ann Arbor, Mich., assignors to Chemotronics, Incorporated, Ann Arbor, Mich.

Filed Oct. 10, 1968, Ser. No. 766,457
Int. Cl. C09j *5/00*
U.S. Cl. 156—305 **17 Claims**


PROVIDING CONTACTING FIBERS WHICH ARE COATED WITH A POLYMER.
STEP 1
EXPOSING THE POLYMER COATED FIBERS TO A SOLVENT FOR THE POLYMER SO AS TO CAUSE THE POLYMER TO RETRACT TO CONTACTING POINTS OF THE FIBERS.
STEP 2
SOLIDIFYING THE POLYMER AT THE CONTACTING POINTS OF THE FIBERS TO PRODUCE THE BOND.
STEP 3

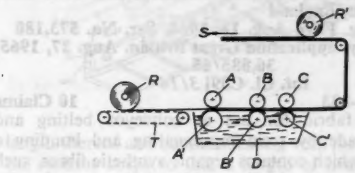
A method for the bonding of fibers by providing a bonding agent at the point of contact of the fibers is described. An essential feature of the method is exposing contacting fibers, which may be monofilamentary or multifilamentary, and which have been coated with a film of a polymer which is solidified sufficiently to resist fluid flow of the polymer on the fibers, to a solvent for the polymer film, preferably in vapor form for ease of control of the process, which then retracts to the points of contact between the fibers because of the action of the solvent. Particularly preferred in the method is the use of elastomeric polymers for bonding and the products obtained thereby. The fibers can be in the form of knitted, woven and non-woven or needle punched batt or mat fabrics. The bonded products are useful in the same general areas where unbonded products are used. Particularly useful are the described bonded knitted nylon stockings.

3,573,131
PROCESS OF MANUFACTURING SOUND-PROOFING COMPOSITE PRODUCTS

Bernard Rudloff, Marckolsheim (Bas-Rhin), France

Filed Mar. 22, 1967, Ser. No. 625,263
Claims priority, application France, May 23, 1966, 8,618
Int. Cl. C09j *5/00*
U.S. Cl. 156—306 **6 Claims**

A process of the continuous manufacture of moldable, thermo-weldable, self-adhesive sound-proofing composite products, comprising the utilization of a layer of felt or unwoven material agglomerated with fibers charged with two different powdered resins having different melting points, namely 60° C. and between 130° C. and 140° C. The material is subjected to a baking treatment at 60° C. for about 4 minutes to impart sufficient strength. A film or coating of 0.5 to 1 mm. of a bituminous or plastic material in the liquid or pasty state is applied to the



material. The composite product, thus produced after drying at 60° C. is delivered in a roll or cut to size. The composite product may be composed of a plurality of layers of felt or unwoven material with the mentioned film, which layers are subjected to a baking treatment at 130°–140° C. for 20 to 30 minutes with a view to produce a sound-proof assembly having a molded, undeformable lining.

3,573,132
PROCESS FOR THE PREPARATION OF POLYIMIDES

Maurice Ducloux and Max Gruffaz, Lyon, France, assignors to Rhone-Poulenc S.A., Paris, France

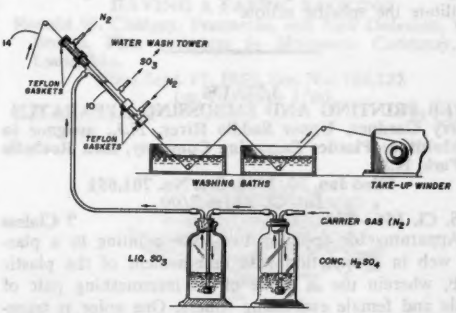
No Drawing. Filed Oct. 30, 1967, Ser. No. 679,163
Int. Cl. C09j *5/00, 7/00*
U.S. Cl. 156—306 **10 Claims**

In preparing polyimides, approximately equimolecular quantities of a tetracarboxylic acid dianhydride and a diprimary diamine are mixed with water and deposited on a support. The water is subsequently removed and then the residual mixture or support is heated to 100° to 400° C.

3,573,133
SURFACE MODIFICATIONS OF ORGANIC SYNTHETIC POLYAMIDES USING SULFUR TRIOXIDE

Henry E. Harris, Savannah, Ga., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of applications Ser. No. 587,421 and Ser. No. 587,506, both filed Oct. 18, 1966. This application July 7, 1969, Ser. No. 839,591
Int. Cl. C09j *5/00*
U.S. Cl. 156—307 **9 Claims**



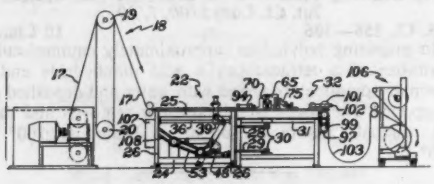
Delustered and improved soil resistant polyamide fibers and self-bonded webs composed of polyamide fibers may be prepared by a process which includes exposing the

polyamide fibers to a sulfur trioxide environment and then subsequently removing the sulfur trioxide therefrom.

3,573,134
FABRICS TREATED WITH CHROMIUM COMPOUNDS
David Leslie Worsfield and John Mills, Pontypool, England, assignors to Imperial Chemical Industries Limited, London, England
No Drawing. Filed Aug. 18, 1966, Ser. No. 573,180
Claims priority, application Great Britain, Aug. 27, 1965, 36,885/65
Int. Cl. C09j *3/14*
U.S. Cl. 156—333 10 Claims

Composite fabric for use as conveyor belting and the like is made by resin-impregnating and bonding a textile fabric which contains organic synthetic fibres, such as nylon. The synthetic fibres either before or after incorporation in the textile fabric are treated with an aqueous solution containing ionic chromium to improve fire resistance and adhesion between the synthetic fibres and the resin.

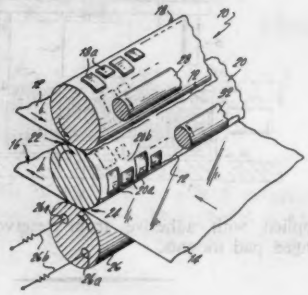
3,573,135
APPARATUS FOR BIAS CUTTING AND SPLICING WIRE OVERHEAD STRIP MATERIAL
Ralph F. Cooper and Charles J. Wagner, Akron, Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.
Filed July 13, 1966, Ser. No. 564,778
Int. Cl. B26d *5/12*
U.S. Cl. 156—353 8 Claims



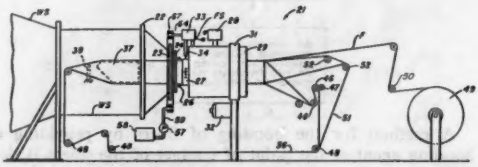
A machine for fabricating a continuous web having angularly disposed wire strands relative to its longitudinal center line from narrow strips cut from a continuous wire coated narrow width tape having wire strands that are parallel relative to the longitudinal center line of the tape, wherein a wire tape feeding device moves tape in a longitudinal direction for a predetermined distance. The tape is clamped and then cut, after which the tape is unclamped and moved onto a splicing table which is subject to being magnetized and which cooperates with a splicing means to facilitate the splicing action.

3,573,136
WEB PRINTING AND EMBOSSING APPARATUS
Harry Gardner, Upper Saddle River, N.J., assignor to Multitone Plastics Engraving Company, Inc., Rochelle Park, N.J.
Filed Jan. 30, 1968, Ser. No. 701,651
Int. Cl. B41m *7/00*
U.S. Cl. 156—384 7 Claims

Apparatus for applying two-color printing to a plastic web in conjunction with embossment of the plastic web, wherein use is made of an intermeshing pair of male and female embossing rollers. One color is transferred to the embossed web areas by the raised areas of the male embossing roller and the second color is applied to the non-embossed areas of the web while it is on the female embossing roller, with the result that without special registration of the color-applying rollers the plastic web receives selected colors in predetermined areas. Subsequent lamination of the plastic web is also achieved while the web is on the female embossing roller to thereby minimize flattening of the embossed areas by the heat and pressure of lamination.



3,573,137
APPARATUS FOR MAKING NONWOVEN FABRICS
Hollis H. Bascom and John J. Greci, Livermore, Calif., assignors to Orcon Corporation, Livermore, Calif.
Original application Oct. 31, 1966, Ser. No. 590,910. Divided and this application Apr. 16, 1969, Ser. No. 835,842
Int. Cl. B31c *1/00, 1/08;* B65h *81/00*
U.S. Cl. 156—428 12 Claims

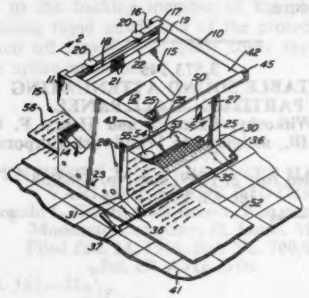


Apparatus for the continuous production of nonwoven fabric which incorporates a supported, continuous belt type feeder and drive mechanism for advancing a plurality of warp strands along a horizontal path in a longitudinal direction, with a dancer roll mechanism incorporated therein for tension control thereof, and a fill strand applying device disposed for rotation about the warp strands as the warp strands are moved along the feeder mechanism.

3,573,138
APPARATUS FOR CORRECTING PHOTOCOMPOSITION OR COLD COPY
Philip E. Tobias, 2537 Mount Carmel Ave., Glenside, Pa. 19038
Filed July 23, 1968, Ser. No. 746,782
Int. Cl. B32b *31/10;* B41b *1/00*
U.S. Cl. 156—519 6 Claims

Apparatus for correcting photocomposition or cold copy is described which includes a portable outer frame, transversely mounted inner rollers, a non-sticking ramp, a copy edge guide, a beam splitter, and reflecting reference lines, such apparatus is capable of being positioned over errors in a line of type to be corrected with the base line of the type and a reference line in optical alignment. A

self adhering strip with corrections thereon can then be aligned over the locations at which errors occur and with the base line of the correction in proper alignment, the



strip can then be cut and the severed portions with corrections applied in covering relation to the location at which the errors occur.

3,573,139
METHOD AND APPARATUS FOR WELDING PLASTIC MEMBERS

Eiji Mori, 10–35, 2-chome Ohokayama, Meguro-ku; Masao Ide, 15–18, 1-chome Ishikawa-machi, Ohta-ku; and Seiji Kaneko, 187, 1-chome Kamiochiai, Shinjuku-ku, all of Tokyo, Japan

Original application Oct. 13, 1967, Ser. No. 675,109, now Patent No. 3,518,136, dated June 30, 1970. Divided and this application Aug. 4, 1969, Ser. No. 862,118
Int. Cl. B23k *1/06;* B29c *27/08;* B32b *31/20*
U.S. Cl. 156—580 **5 Claims**

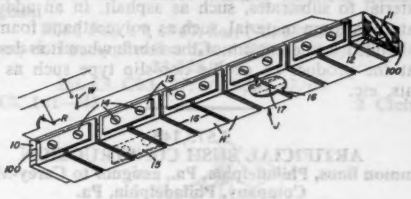
Apparatus for welding plastic members with ultrasonic waves comprises a generator for ultrasonic waves of a frequency not lower than 100 kc. s. in a void free volume of liquid medium, and a device for focusing the waves toward a focal zone where the surfaces of the plastic members to be welded are disposed, there being a liquid interface between the surface of at least one of the plastic members and the liquid medium.

3,573,140
HEATING JAW FOR IMPULSE SEALER

Ronald E. Griffith, Rochester, and Hollis T. Galley, Penfield, N.Y. (both of Kodak Park, Rochester, N.Y. 14650)

Filed Oct. 7, 1968, Ser. No. 765,310
Int. Cl. B30b *15/34*
U.S. Cl. 156—583 **9 Claims**

The heating jaw for a heat sealer of the impulse type comprises an elongated block of insulating material on the bottom face of which there is mounted an electrical heating element comprising a plurality of resistor strips of metal of high specific resistance electrically connected in series but physically spaced apart to allow for expansion and contraction of the strips when an impulse of current is passed therethrough. The block of insulating material has a vacuum chamber extending along the

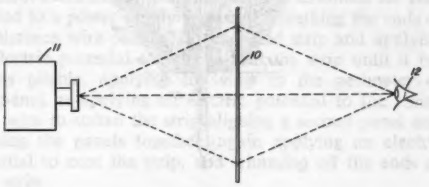


length thereof and communicating with the spaces between the resistor strips so that a length of heat-sensitive splicing tape can be held on the jaw by vacuum when said vacuum chamber is evacuated.

3,573,141
POLYMERIC REAR PROJECTION SCREENS

Chen-I Lu and Edward D. Morrison, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed July 1, 1969, Ser. No. 838,304
Int. Cl. C03b *21/60;* C08f *45/14*
U.S. Cl. 161—2 **15 Claims**



Rear projection screens that consist essentially of polypropylene can be improved significantly by incorporating into the screen one or more "crystal deforming" additives, such as finely divided starch, sucrose octoacetate and cellulose acetate butyrate, which additives (a) are essentially non-nucleating in their effect on the crystal structure of the screen material, (b) are able to deform the spherulites in the crystal structure to thereby increase light diffusion, and (c) have refractive indices within ±0.05 of that of the polypropylene in the screens.

3,573,142
MOLDED THERMOPLASTIC ARTIFICIAL SOD HAVING A FABRIC BACKING

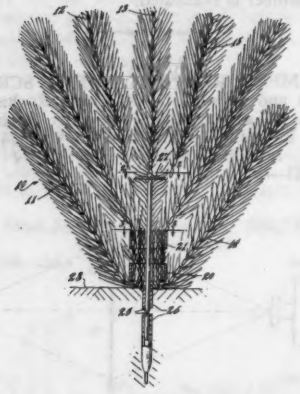
Ronald W. Chidgey, Pensacola, and Jack Doleman, Gulf Breeze, Fla., assignors to Monsanto Company, St. Louis, Mo.

Filed Sept. 17, 1968, Ser. No. 760,222
Int. Cl. A41g *1/00*
U.S. Cl. 161—21 **10 Claims**

Molded, thermoplastic, three-dimensional synthetic sod is provided which comprises a matrix having openings, projections extending from the matrix to simulate blades

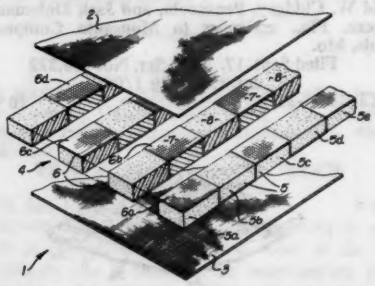
of grass and a bonded backing on the under side of the matrix. The backing is composed of a synthetic fibrous, porous fabric which serves to prevent weed growth and erosion and yet is porous which allows seepage of water through the sod. The fabric also allows bonding of the material to substrates, such as asphalt. In an additional feature, a foam material, such as polyurethane foam may be bonded to the bottom of the fabric when it is desirable that the product be of the non-slip type such as doormats, etc.

3,573,143
ARTIFICIAL BUSH CONSTRUCTION
Ammon Baus, Philadelphia, Pa., assignor to Carey-McFall Company, Philadelphia, Pa.
Filed Jan. 7, 1969, Ser. No. 789,550
Int. Cl. A41g 1/00
U.S. Cl. 161—27 **9 Claims**



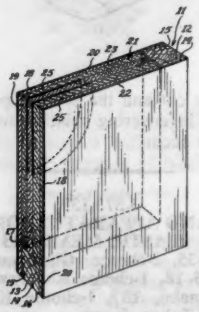
A plurality of separate artificial branches arranged in a bundle, a binding circumposed about the bundle, and certain of the branches bent outwardly and upwardly exteriorly of the binding to conceal the latter.

3,573,144
SANDWICH PANEL TYPE STRUCTURAL ELEMENTS AND METHOD OF MAKING SAME
Ralph A. Andersen, 821 Arcadia Ave., Arcadia, Calif. 91006
Filed Aug. 11, 1969, Ser. No. 848,921
Int. Cl. B32b 5/18
U.S. Cl. 161—38 **16 Claims**



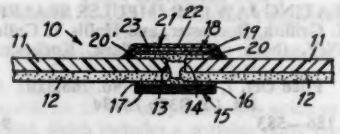
A structural element of the sandwich panel type. The core is novelly formed by interweaving resin-impregnated glass cloth webs and rigid spacer blocks. The core has multiple glass cloth webs, each with multiple block supported corrugations, which corrugations are adjacently offset. This core provides advantageous strength properties to the element, specifically high strength-to-weight ratios, and, as well, large areas for bonding element face sheets to the core.

3,573,145
PORTABLE SOUND ATTENUATING PARTITION WALL PANEL
Edward R. Witkosky, Chicago, and Henry F. Golder, Riverdale, Ill., assignors to Woodwork Corporation of America
Filed July 3, 1969, Ser. No. 838,938
Int. Cl. E04b 1/86
U.S. Cl. 161—41 **9 Claims**



A portable room divider panel of high sound attenuating characteristics, the panel having a wood frame, a sheet of low pressure laminate hardboard bonded to each face of the frame to form a chamber, a decorative skin of high pressure laminate bonded to each sheet of hardboard, and a core in the chamber consisting of three laminar mineral fiber boards of which a one inch thick section weighs about 0.9 pound per square foot, the boards being secured to one another by widely spaced spots of adhesive which occupy a minor fraction of the surface area of the core. The core fills the chamber and affords structural support for the hardboard sheets without being compressed by the sheets. A four by eight foot panel which is one and three-quarters inch thick and weighs 125 pounds has an overall sound transmission class of about 43 when tested in accordance with ASTM specification E90–66T.

3,573,146
TAPE SPLICE CONSTRUCTION
Joseph C. Guinan, Troy, and Richard F. Grossman, Voorheesville, N.Y., assignors to Norton Company, Troy, N.Y.
Filed Aug. 18, 1969, Ser. No. 850,934
Int. Cl. B32b 7/04, 7/10
U.S. Cl. 161—36 **8 Claims**



An improved butt splice is provided in pressure-sensitive adhesive tapes and in release liners used in combination with such tapes. A protective tape is provided in

combination with a splice cover tape in which the adhesive mass has less adhesion to the backing member of the splice cover tape and to the backing member of the tape or release liner to be butt spliced than does the adhesive mass of the succeeding wrap of tape in a roll thereof to the backing member of the protective tape. Thus during rapid unwinding of the protective tape will be picked off leaving the splice cover tape in position and the splice undisturbed.

3,573,147

SYNTHETIC TURF PRODUCTS HAVING VARIABLE BLADE WIDTHS

Donald L. Elbert, Gulf Breeze, Fla., assignor to Monsanto Company, St. Louis, Mo.

Filed Jan. 24, 1968, Ser. No. 700,096
Int. Cl. A41g *1/00*
U.S. Cl. 161—21 16 Claims

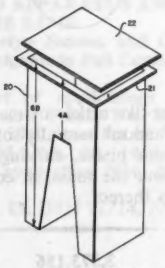
Random discontinuous slits cut in monofilament ribbons before weaving, knitting, tufting, or otherwise binding provide in a finished synthetic turf product, random variable blade widths with physical characteristics and appearance similar to that of natural grass.

3,573,148

PRESS FEED CHARGE COMPRISING WOOD CHIPS AND BINDER ENCASED IN AN ENVELOPE HAVING SUFFICIENT STRUCTURAL INTEGRITY TO RETAIN A DESIRED SHAPE WHEN FILLED

Robert P. Habgood, Jr., Joseph N. Ianuzzi, and Robert W. Mericle, Bradford, Pa., assignors to AVM Corporation

Original application Feb. 16, 1967, Ser. No. 616,609. Divided and this application Apr. 3, 1969, Ser. No. 813,091
Int. Cl. B32b *1/00;* B29j *5/02*
U.S. Cl. 161—43 5 Claims



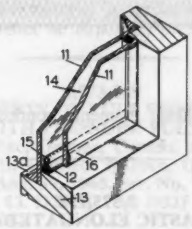
A press feeding article and method for wood chips and resin in which an enveloped, premeasured and predistributed charge is prepared for a press. The method comprises forming an envelope of preformed shape to contain a load of substantially non-flowable charge of preselected shape and distribution, loading the envelope with non-flowable charge, closing the envelope, placing the envelope in a mold and pressing to final shape.

3,573,149

DOUBLE GLAZED WINDOWS

William J. Tibble, London, James P. Bock, Chigwell, Roy F. Lankester, Potters Bar, and George E. Patterson, Ilford, England; said Tibble, Bock, and Lankester assignors to Insitu Double Glazing Limited, London, England

Filed July 17, 1967, Ser. No. 698,363
Claims priority, application Great Britain, July 22, 1966, 33,028/66
Int. Cl. C03c *27/10;* B32b *17/00*
U.S. Cl. 161—45 2 Claims



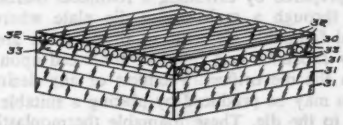
A method of making a multi-panel unit having a cavity construction, comprising cutting at least two panels to a required size, degreasing, and priming the perimeter regions of each panel, cutting a thermoelectric spacer and sealing strip to the peripheral length of the panels with sufficient extra length to form electrical terminals for connection to a power supply source, unsheathing the ends of a resistance wire passing through said strip and applying an electric potential thereto to heat the strip until it becomes pliable, applying the strip to the perimeter of one panel, re-applying an electric potential to the resistance wire to soften the strip aligning a second panel and pressing the panels together, again applying an electric potential to cure the strip, and trimming off the ends of said strip.

3,573,150

TRANSPARENT ARMOR

Lawrence J. Broutman, Skokie, and Robert J. Szuch, Blue Island, Ill., assignors to the United States of America as represented by the Secretary of the Army

Filed July 24, 1968, Ser. No. 747,220
Int. Cl. B32b *17/04;* F41h *1/02, 5/08*
U.S. Cl. 161—55 7 Claims



Laminated armor material having high resistance to penetration by small arms missiles comprising an outer lamina having glass rods or ceramic rods embedded in a polymeric matrix and one or more inner polymeric laminae, the several laminae being cemented together, and method of making the same.

3,573,151

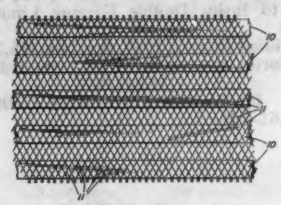
FILAMENT REINFORCED PLASTIC FILM

Henry D. Dawbarn, Waynesboro, Va., assignor to Thiokol Chemical Corporation, Bristol, Pa.

Original application Apr. 17, 1964, Ser. No. 360,673, now Patent No. 3,445,319, dated May 20, 1969. Divided and this application Apr. 2, 1969, Ser. No. 841,640
Int. Cl. B32b *5/12, 23/10*
U.S. Cl. 161—58 5 Claims

An integral thermoplastic film product including a plurality of parallel spaced substantially molecularly un-

oriented thermoplastic film strips reinforced with diagonally arranged substantially straight molecularly

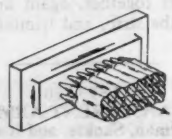


oriented thermoplastic filaments bonded to at least one side thereof.

3,573,152
THERMOPLASTIC ELONGATED CELLULAR PRODUCTS

Fred E. Wiley, Longmeadow, Mass., and Frederick D. De Bell, Hazardville, and John M. De Bell, Enfield, Conn., assignors to Foster Grant Co., Inc., Leominster, Mass.

Continuation-in-part of application Ser. No. 619,591, Jan. 27, 1967, which is a continuation of application Ser. No. 278,294, May 6, 1963, which in turn is a division of application Ser. No. 828,862, July 22, 1959, now Patent No. 3,121,130. This application July 29, 1969, Ser. No. 848,144
Int. Cl. B29h *7/20;* B32b *5/12*
U.S. Cl. 161—60 **6 Claims**



Integral foam objects composed of a plurality of fused strands having a density of 4 pounds per cubic foot or less are prepared by extruding a foamable thermoplastic material through a multi-orifice die plate whereby the individual foamable elements in strand form are simultaneously expanded and fused or coalesced upon emerging from the die orifices. Products of any desired configuration may be produced by placing a suitable former adjacent to the die. These foamable thermoplastic products may be polystyrene, polyethylene, or any of the known thermoplastics into which a non-solvent blowing or expanding agent is incorporated prior to extrusion.

3,573,153
LAMINATED FOAM PRODUCTS AND THEIR PREPARATION

Joseph Henry Ryan, Jr., Claymont, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

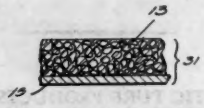
No Drawing. Filed June 24, 1969, Ser. No. 836,155
Int. Cl. B32b *27/00, 27/32*
U.S. Cl. 161—159 **10 Claims**

Thick foam structures having a low density and high durability coupled with good cushioning performance, produced by laminating a plurality of low density, high tear strength foam sheets under a minimum of pressure and at temperatures below the melting point of the foam.

3,573,154
CORK UNDERLAYER MATERIAL

Henry G. Tank, Glendale, Wis., assignor to Connor Forest Industries, Laona, Wis.

Filed Apr. 3, 1967, Ser. No. 627,817
Int. Cl. B32b *11/12, 19/02, 19/04*
U.S. Cl. 161—162 **9 Claims**

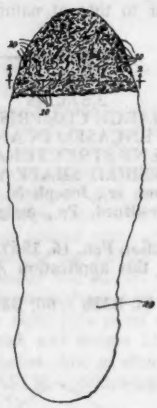


Disclosed herein is an underlayer material for flooring installations or floor coverings, which material is in roll form and comprises a layer of natural cork bonded to an asphalt impregnated sheet. Also disclosed herein is a method of producing the underlayer material.

3,573,155
NONSLIP ARTICLE OF MANUFACTURE

Wilbur A. E. Mitchell, Greeley, Colo., assignor to Mitchell Tackle, Inc., Greeley, Colo.

Filed May 17, 1968, Ser. No. 730,181
Int. Cl. A43b *13/22;* B32b *5/16;* C09k *3/14*
U.S. Cl. 161—162 **8 Claims**



A nonslip rubber-like article of manufacture, comprising an undercured and substantially soft-rubber-like dough mass, and aluminum pieces, shavings and particles impregnated throughout the mass, in comparison to a full curing of the mass thereof.

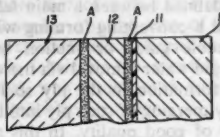
3,573,156
GLASS FRONT BUILDING PANEL COMPRISING OUTER GLASS LAYERS AND INNER FELT LAYER

William W. Reilly, 4506 Euclid, Youngstown, Ohio 44506

Filed Dec. 3, 1968, Ser. No. 780,793
Int. Cl. B32b *17/06*
U.S. Cl. 161—197 **4 Claims**

A building panel particularly suited for exterior wall surfaces and comprising a laminated structure having a glass front, a layer of colored enamel on the inner surface thereof, a layer of builders felt and a back panel

of glass or other suitable material. The several portions of the panel being permanently bonded to one another by



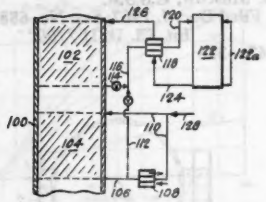
a suitable adhesive so as to form a weatherproof shock resistant non-shattering decorative wall panel.

3,573,157

INCREASING THE POLYSULFIDE CONTENT OF AN ALKALINE PULP IMPREGNATION LIQUOR

William Hugh Cook, Beaconsfield, Quebec, Canada, assignor to Domtar Limited, Montreal, Quebec, Canada

Filed May 8, 1967, Ser. No. 636,874
Int. Cl. D21c *3/26, 11/14*
U.S. Cl. 162—19 2 Claims



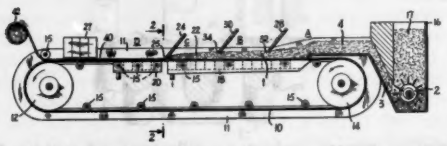
A method for increasing the polysulfide content of an alkaline impregnation liquor. An impregnation zone is divided into a lower temperature zone and a higher temperature zone. The lower temperature zone is maintained at a temperature below that at which degradation of polysulfide occurs. After an initial contact of chips and impregnation liquor, the liquor is withdrawn from the higher temperature zone and from contact with the chips, oxidized to form a liquor containing polysulfides, and then returned to the lower temperature zone of the impregnation zone for further impregnation of the chips.

3,573,158

MICROPOROUS FIBROUS SHEETS USEFUL FOR FILTERS AND APPARATUS AND METHOD OF FORMING THE SAME

David B. Pall, Roslyn Estates, and Cyril A. Keedwell, Jericho, N.Y., assignors to Pall Corporation, Glen Cove, N.Y.

Continuation-in-part of applications Ser. No. 98,595, Mar. 27, 1961, now Patent No. 3,238,056, Ser. No. 215,151, Aug. 6, 1962, now Patent No. 3,246,767, and Ser. No. 530,735, Feb. 28, 1966, now Patent No. 3,353,682. This application Nov. 20, 1967, Ser. No. 684,175
Int. Cl. D21f *11/14, 1/06*
U.S. Cl. 162—131 23 Claims



A process is provided for forming microporous sheet material useful as filters, which is substantially uniform in thickness, porosity and density, from a slurry of particulate material.

A porous sheet material also is provided, with one or a plurality of layers, each composed of a microporous multistratum layer which may optionally be adherent to a porous substrate and having a high voids volume, a pore size of less than 25μ, and substantially uniform in thickness, porosity and density.

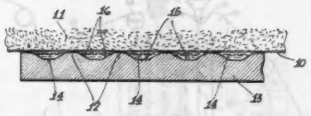
An apparatus is provided useful for preparing such material, such as a Fourdrinier machine, including one or more barriers such as doctor blades positioned to control deposition of slurried particulate material upon a support so that the deposition of deflocculated and uniformly flocculated material is uniform, and large non-uniform flocs cannot be deposited on the support.

3,573,159

DEFLOCCULATION OF PULP STOCK SUSPENSION WITH PRESSURE PULSES

Ola Sepall, Quebec, Quebec, Canada, assignor to Anglo Paper Products, Limited, Quebec, Quebec, Canada

Filed Aug. 30, 1968, Ser. No. 756,447
Int. Cl. D21f *11/00;* D21j *1/00*
U.S. Cl. 162—208 8 Claims



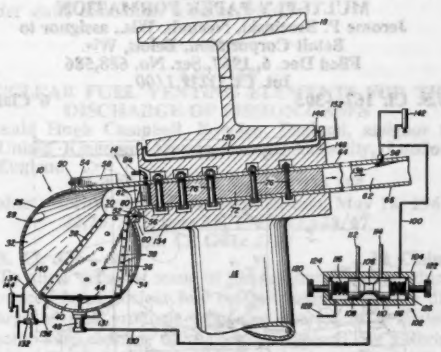
The invention relates to a method and means for deflocculating a stock suspension on a paper machine forming wire by applying a succession of pressure pulses in reversely alternate directions to the suspension. These pulses are produced by inducing drainage of liquid from the suspension in a series of spaced areas extending transversely of the wire and causing at least a portion of the drained liquid to flow back into contact with the wire in the adjoining space between the drainage areas.

3,573,160

TAPERED MANIFOLD STOCK DISTRIBUTION SYSTEM FOR A PAPERMAKING MACHINE WITH MOVABLE WALL THEREIN

Kasimir Lopas, 118 Skyview Drive, Stamford, Conn. 06902

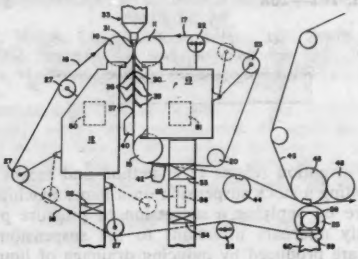
Filed Jan. 29, 1969, Ser. No. 794,863
Int. Cl. D21f *1/06*
U.S. Cl. 162—259 9 Claims



The disclosed stock distribution system provides automatic and continuous adjustment to variations in stock flow velocity in a papermaking apparatus. A tapered manifold communicates across a flow channel to distribute paper stock uniformly onto the Fourdrinier wire. The tapered manifold contains a semirigid diaphragm which forms a wall of the interior manifold chamber. Sensors

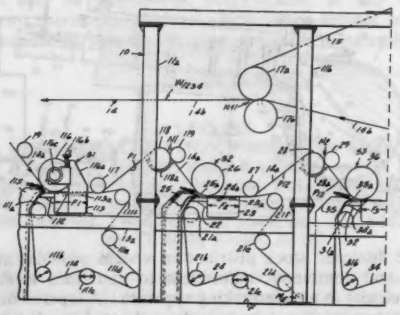
are provided across the width of the flow channel to monitor stock flow and detect flow velocity irregularities. Each sensor controls the shape of the tapered manifold diaphragm at a position corresponding to that of the sensor. The effective tape of the manifold is thus changed at the corresponding position permitting the velocity of stock issuing from that position in the manifold to be adjusted to a reference level. The invention further provides means for discharging fluid from the leading edges of deflectors and spacers in the flow channel to prevent fiber hang-up. Also, means are provided for applying exterior pressure to the flow channel to prevent distortion or rupture due to high internal pressures.

3,573,161
VERTICAL PAPER MACHINE
Willard C. Notbohm, Watertown, N.Y., assignor to The Black Clawson Company, Hamilton, Ohio
Filed Oct. 17, 1968, Ser. No. 768,284
Int. Cl. D21f 2/00
U.S. Cl. 162—301 **7 Claims**



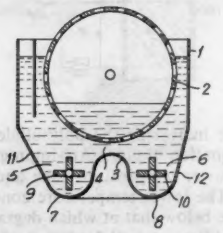
In a two-wire vertical paper machine, the opposed downwardly traveling reaches of the two wires which converge to define the forming zone are led partially around a single couch roll located below the forming zone, the upper run of the resulting superimposed wires is then caused to diverge from the lower wire, and the sheet is carried on the resulting generally horizontally traveling wire run to a pickup station. This construction of vertical paper machine is especially adapted for use with a conventional pickup roll and felt arranged to pick up the sheet from the upper surface of the wire run.

3,573,162
MULTI-PLY PAPER FORMATION
Jerome P. Brezinski, Neenah, Wis., assignor to Beloit Corporation, Beloit, Wis.
Filed Dec. 6, 1967, Ser. No. 688,586
Int. Cl. D21f 1/00
U.S. Cl. 162—303 **6 Claims**



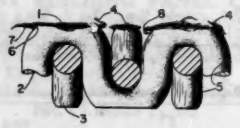
This invention relates to a paper making machine for forming a plural or multi-ply web using more compact and efficient ply-forming sequences than are ordinarily employed in conventional cylinder machines. This is done in each such sequence by the use of a single web ply-forming zone defined between a main felt carrying a preformed ply and a converging forming wire wrapped over a water-permeable guide or suction box designed for efficient and rapid water removal via the wire, with quality incipient web formation in the ply so formed, followed immediately by merging of such ply into the desired multi-ply moist web of good quality. In this arrangement, the felt carries the resultant multi-ply web from sequence, to sequence thereby allowing for intermediate dewatering at press nips receiving the felt carrying the resultant web in each instance.

3,573,163
CYLINDER MOULD FOR MANUFACTURING FIBRE-CEMENT PRODUCTS
Mark Solomonovich Neifeld, Pavel Samuilovich Moroz, and Lev Samsonovich Boyazny, Moscow, U.S.S.R., assignors to Spetsialnoe Konstruktorskoe Bjuro Po Oborudovaniju Dlya Proizvodstva Asbestotsementnykh Izdely I Rulonnokrovelnykh Materialov, Tikhvinsky pereulok, Moscow, U.S.S.R.
Filed Dec. 7, 1967, Ser. No. 688,786
Int. Cl. D21j 7/00
U.S. Cl. 162—323 **3 Claims**



Apparatus for manufacturing fibre-cement products, wherein a tank rotatably supports a revolving screen in the upper portion thereof. The bottom of the tank includes two spaced convex portions interconnected by a concave portion, relative to the tank interior, which define a smooth undulated contour surface, mixing paddles being mounted in the convex portions of the tank. The screen is vertically spaced above the concave portion by an amount substantially equal to 0.1 to 0.2 times the outer diameter of the screen.

3,573,164
FABRICS WITH IMPROVED WEB TRANSFER CHARACTERISTICS
Norman D. Friedberg and Charles L. Wosaba II, Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Aug. 22, 1967, Ser. No. 662,367
Int. Cl. D21f 1/10
U.S. Cl. 162—348 **8 Claims**



A process for improving the parting or transfer characteristics of monofilament polymeric fabrics in supporting and transferring moist webs from one step to another

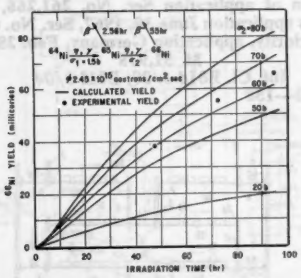
in papermaking and non-woven web manufacturing operations. Improved transfer characteristics in the monofilament polymeric fabrics are achieved by abrading away the knuckle surfaces thereof with a fine abrasive medium to increase the knuckle imprint area of the fabric. The improved parting characteristics engendered in the monofilament polymeric fabric by the abrasive treatment improve web transfer, web drying, web product characteristics and general machine operation.

3,573,165

PRODUCTION OF HIGH PURITY NICKEL-66

John J. Pinajian, Oak Ridge, Tenn., assignor to the United States of America as represented by the United States Atomic Energy Commission

Filed Mar. 10, 1969, Ser. No. 805,560
Int. Cl. G21g *1/02*
U.S. Cl. 176—16 **5 Claims**



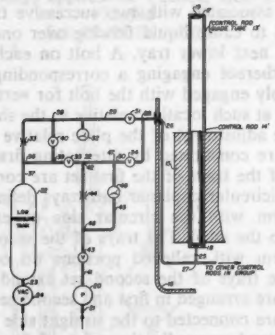
A method has been provided for the production of high purity nickel-66 by a double neutron capture reaction with enriched Ni–64 in a neutron flux in the excess of about 2×10^{15} n/cm.^{2}·sec. The high energy (1.038 mev.) gamma radiation from the daughter Cu–66 makes the Ni–66 a very useful isotope in numerous tracer diffusion studies and related investigations, as in metallurgical research.

3,573,166

HYDRAULIC CONTROL ROD DRIVE SYSTEM

John H. Germer, San Jose, Calif., assignor to the United States of America as represented by the United States Atomic Energy Commission

Filed July 24, 1968, Ser. No. 747,161
Int. Cl. G21c *1/16*
U.S. Cl. 176—36 **7 Claims**



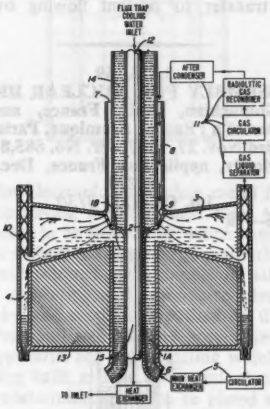
A system for controlling a nuclear reactor utilizing pressurized coolant for raising control rods out of the reactor core. The system positions individual control rods or groups thereof in either an all-in or an all-out position, and incorporates means for assuring fail-safe operation and for position indication of the rods. The simplicity of the system makes it feasible to provide a sufficient number of weak control rods to permit all-in or all-out operation without excessive increments of reactivity. The individual control rods in large thermal reactors, for example may be operated in groups widely dispersed throughout the core, sufficiently spaced that the rods have little or no interaction; while a fast reactor is much more closely-coupled. While this system is particularly applicable to sodium-cooled fast reactors, it can be adapted to other types of reactors.

3,573,167

KINETIC INTENSE NEUTRON GENERATOR REACTOR

L D Percival King, Santa Fe, N. Mex., assignor to the United States of America as represented by the United States Atomic Energy Commission

Filed June 6, 1968, Ser. No. 734,961
Int. Cl. G21c *3/46, 1/24*
U.S. Cl. 176—47 **1 Claim**



A nuclear reactor capable of producing on a continuous basis an intense neutron flux, said reactor comprising a small core region, a large containment vessel, pumping means to continuously and rapidly move a liquid nuclear fuel through the core and inject it into the said vessel in such a manner that the geometry of the fuel in the core under static conditions is supercritical.

3,573,168

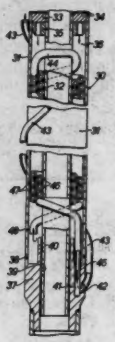
NUCLEAR FUEL VENTING ELEMENTS FOR THE DISCHARGE OF FISSION GASES

Ronald Hugh Campbell, Bowden, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed May 2, 1968, Ser. No. 726,155
Claims priority, application Great Britain, May 16, 1967, 22,767/67; June 15, 1967, 27,628/67
Int. Cl. G21c *3/02*
U.S. Cl. 176—68 **10 Claims**

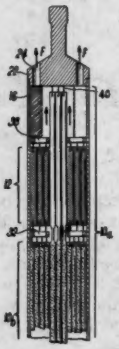
To allow decay of some of the gaseous fission products produced from nuclear fuel under irradiation before discharge of said products from the interior of a nuclear reactor fuel element of the vented type to the exterior surroundings of the fuel element, there is included within the fuel element a passage-defining component such as a capillary tube, an external surface of which defines an additional passage in series with the passage defined by the component, the two passages together providing a vent path for gaseous fission products. Alternatively or in addition, tubing in communication with the interior of the fuel element extends at least in part over the ex-

ternal surface of the fuel element and provides a vent path or additional vent path. Such tubing may be in the form of a capillary tube coiled over said surface



which serves also for fuel element spacing and to improve heat transfer to coolant flowing over the fuel element.

3,573,169
FUEL ASSEMBLY FOR NUCLEAR REACTORS
André Gumuchian, Paris, France, assignor to Commissariat a l'Energe Atomique, Paris, France
Filed Nov. 27, 1967, Ser. No. 685,863
Claims priority, application France, Dec. 5, 1966, 86,220
Int. Cl. G21c *3/30*
U.S. Cl. 176—78 **6 Claims**



A nuclear fuel assembly comprising at least one bundle of pins which are loaded with fissile material, provided with expansion chambers and disposed within a tubular box.

The pins are arranged in two sections so that the expansion chambers of said pins are located at opposite ends whilst those portions of said pins which are loaded with fissile material are all located at the same level.

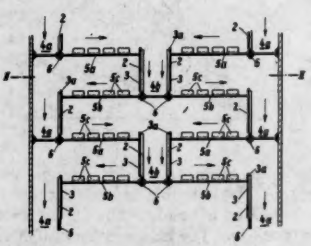
3,573,170
ENZYME PRODUCTS
Sidney G. Clark and Harold E. Feierstein, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.
No Drawing. Filed Sept. 19, 1968, Ser. No. 760,981
Int. Cl. C07g *7/02*
U.S. Cl. 195—63 **12 Claims**

This invention relates to particulate enzyme products and to processes for preparing the same; these products contain enzymes produced by *Bacillus subtilis*, have a bulk density of from about 0.25 gram/cc. to about 2.0 grams/cc. and have a critical particle size.

3,573,171
LABORATORY REAGENT FOR ASSAY OF LACTIC ACID
Stanley Edward Green, Los Angeles, Calif., assignor to Smith Kline & French Laboratories, Philadelphia, Pa.
No Drawing. Filed Sept. 6, 1968, Ser. No. 758,120
Int. Cl. G01n *31/14*
U.S. Cl. 195—103.5 **9 Claims**

The speed and accuracy of known enzymatic assays for lactic acid containing fluids is improved by using a novel reagent assay comprising: the enzymes lactate dehydrogenase and glutamate-pyruvate transaminase, the coenzyme nicotinamide-adenine dinucleotide, a buffer, enzyme stabilizers, and a novel pyruvate ion trapping agent.

3,573,172
PLATE COLUMN FOR HEAT AND/OR MASS EXCHANGE
Hans-Peter Streuber, Hagedornstr. 46, Hilden Rhineland, Germany
Continuation of application Ser. No. 261,268, Feb. 27, 1963. This application June 30, 1967, Ser. No. 650,550
Claims priority, application Germany, Feb. 28, 1962, M 51,978
Int. Cl. B01d *3/20*; B01f *3/04*
U.S. Cl. 202—158 **6 Claims**



A fractionating column having a vertical shell in which pairs of vertical strips are fixedly attached to the internal surface of the shell and extend inwardly thereof. A plurality of vertical plates in the shell and clamping devices securing each plate at the ends thereof to a respective pair of strips to enable vertical adjustment of the plate relative to the strips. Support members extending horizontally on the plates and secured thereto. A plurality of spaced superposed tray in the shell and each having an edge secured to a respective support member on a plate whereby the tray is supported at the edge. The vertical plates extend upwardly of the trays to define weirs therefor. The vertical plates associated with two successive trays are mutually offset to cause liquid flowing over one weir to encounter the next lower tray. A bolt on each strip at the lower end thereof engaging a corresponding tray and a nut adjustably engaged with the bolt for vertically adjusting the tray at such location relative to the shell independently of the adjustment of the plate relative to the strips. The trays are constituted by alternating first and second sets, each of the trays of the first set are constituted by a pair of semicircular coplanar half-trays defining a tray of circular form with the circular side of each half-tray extending to the shell. The trays of the second set are of circular form with relieved portions on opposite sides thereof. The trays of the second set extend to the shell. The plates are arranged in first and second sets. The plates of one set are connected to the straight side of each half-tray and extend upwardly thereof to define the weir for liquid flowing from the half-tray downwardly to the next lower tray. The plates of the other set are connected to respective relieved portions and extend upwardly thereof to define the weir for liquid flowing from the trays of the second set downwardly to the next lower trays. The

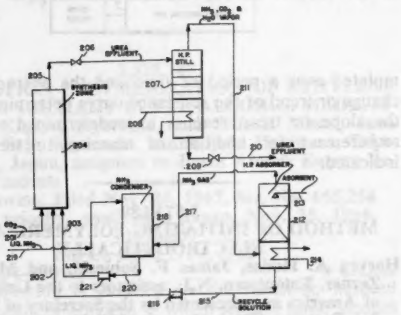
relieved portions are parallel to the plates of the one set and spaced from the shell a distance substantially equal to the horizontal distance between the plates of the one set which are connected to the straight sides of coplanar half-trays.

3,573,173

PROCESS FOR RECOVERING EXCESS AMMONIA IN UREA SYNTHESIS BY DIRECT CONTACT CONDENSATION WITH LIQUID AMMONIA

Eiji Otsuka, Kazumichi Kanai, and Tadao Sakai, Fujisawa, Shigeru Inoue, Kamakura, Nobuyoshi Hashimoto, Yokohama, Masatoshi Yakabe, Mobara, and Tetsuo Kimura, Kamakura, Japan, assignors to Mitsui Toatsu Chemicals Incorporated, Tokyo, Japan

Filed July 24, 1968, Ser. No. 747,336
Int. Cl. C07c *127/10*
U.S. Cl. 203—21 **7 Claims**



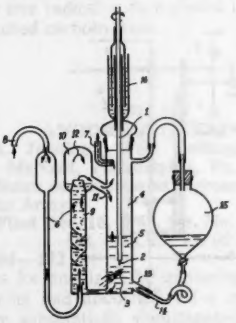
A process for recovering excess ammonia in urea synthesis which comprises separating excess ammonia from a urea synthesis effluent in the form of an ammonia gas, making the ammonia gas free of carbon dioxide if necessary and bringing the ammonia gas free of carbon dioxide with raw material liquid ammonia thereby the ammonia gas is condensed to form liquid ammonia at high temperature.

3,573,174

PROCESS FOR THE DETECTION OR DETERMINATION OF FLUORINE

Paul Caro, Tempe, Ariz., assignor to Etat Francais, represente par le Ministredes Armees, Delegation Ministerielle pour l'Armenent (Direction des Poudres), Paris, France

Filed Oct. 22, 1965, Ser. No. 502,639
Claims priority, application France, Oct. 23, 1964, 992,386
Int. Cl. B01k *1/00*
U.S. Cl. 204—1 **5 Claims**



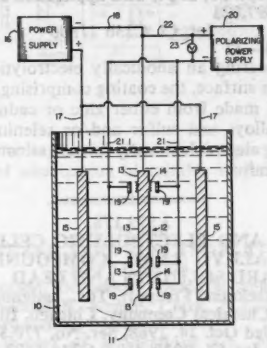
Fluorine is detected or determined by introducing a sample being analyzed for the presence of fluorine into an acid solution having immersed therein a zirconium electrode and a platinum electrode and measuring the electric current which is produced.

3,573,175

METHOD OF STOPPING-OFF PLATING IN ELECTROPLATING BATHS

Ram Dev Bedi, Oak Park, Mich., assignor to M & T Chemicals Inc., New York, N.Y.

Continuation of application Ser. No. 291,987, July 1, 1963. This application May 1, 1968, Ser. No. 725,956
Int. Cl. C23b *5/48*; B01k *3/02*
U.S. Cl. 204—15 **2 Claims**



A process for electroplating a plate metal from a bath onto a cathode having predetermined areas to be plated and selected areas to be stopped off which comprises placing an auxiliary electrode adjacent to said selected areas, maintaining said selected areas anodic to said auxiliary electrode and subjecting said cathode to plating current density whereby said metal is deposited on the said predetermined areas and said selected areas remain stopped off, and an apparatus for electroplating which comprises an electroplating bath, at least one anode therein, a cathode having predetermined areas to be plated and selected areas to be stopped off, an auxiliary electrode adjacent to each of the said selected areas of said cathode, a main power supply establishing a potential across the anode and the cathode, and means for maintaining said selected areas anodic to said auxiliary electrode. In one embodiment, the means for maintaining said selected areas anodic to said auxiliary electrode includes a polarizing power supply establishing a potential between selected areas of the cathode and the auxiliary electrode, the positive terminal of the polarizing power supply being joined to the negative terminal of the main power supply. The auxiliary electrode may contain a thin coating of platinum sufficient to substantially inhibit electroplating of said auxiliary electrode.

3,573,176

SELECTIVE ANODIZATION APPARATUS AND PROCESS

Wilhelm H. Laznovsky, Princeton, N.J., assignor to RCA Corporation

Filed July 19, 1968, Ser. No. 746,061
Int. Cl. C23b *5/48*; B23p *1/02*
U.S. Cl. 204—15 **4 Claims**

Thin film tantalum resistors are treated by selective anodization, by bringing an electrolyte into contact with the resistor to be treated and applying a voltage between the electrolyte and the resistor. The electrolyte is dis-

posed on a raised portion of a base plate in the form of a thin liquid layer which is prevented from extending laterally beyond the raised portion by surface tension forces.

3,573,177

ELECTROCHEMICAL METHODS FOR PRODUCTION OF FILMS AND COATINGS OF SEMICONDUCTORS

William McNeill, Philadelphia, Pa., assignor to the United States of America as represented by the Secretary of the Army

No Drawing. Continuation-in-part of application Ser. No. 399,941, Sept. 28, 1964. This application Jan. 11, 1968, Ser. No. 697,021

Int. Cl. C23b *11/00*

U.S. Cl. 204—32 **4 Claims**

Articles bearing an anodically electrolytically formed coating on its surface, the coating comprising, in the main, a compound made from either zinc or cadmium or cadmium-zinc alloys and sulfur and/or selenium, the compounds being electrochemically formed as compounds, and methods therefor.

3,573,178

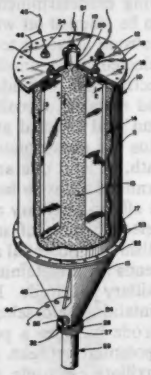
METHOD AND ELECTROLYTIC CELL TO PRODUCE ALKYL LEAD COMPOUNDS FROM GRIGNARD SOLUTION AND LEAD

Guy E. Blackmar, Freeport, Tex., assignor to Nalco Chemical Company, Chicago, Ill.

Filed Oct. 24, 1968, Ser. No. 770,370

Int. Cl. B01k *3/00;* **C22d** *1/02*

U.S. Cl. 204—59 **20 Claims**



Electrolytic cell for producing organo metallic compounds by electrolyzing a liquid electrolyte in the presence of a particulate consumable metal, wherein the cell includes a vessel of electrically conductive material, a plurality of cathode assemblies mounted within the vessel in a bed of electrically conductive particulate consumable material, and each cathode assembly having a cathode of electrically conductive material insulatively mounted with respect to the vessel and a sheath of liquid-porous insulating material enclosing the cathode, and each cathode being individually fused.

3,573,179

METHOD AND APPARATUS FOR THE CONTROL OF ELECTROLYTIC REFINING CELLS

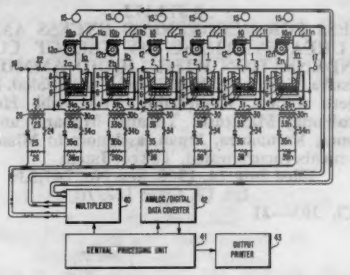
George P. Dirth, Walnut Creek, Calif., and Terrence K. McMahon, New York, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 14, 1965, Ser. No. 519,109

Int. Cl. C22d *3/02, 3/12*

U.S. Cl. 204—67 **7 Claims**

Method and system for controlling the addition of alumina to electrolytic aluminum refining cells to avoid the occurrence of "anode effects" therein. Control of individual refining cells is based upon the slope or trend of the bath resistance profile instead of actual measured resistance values. The bath resistance values are accumulated over a period of time and the average rate of change or trend of the resistance curve determined. When the slope or trend reaches a predetermined value, the requirement for addition of alumina to the bath is indicated.



3,573,180

METHOD OF INITIATING POLYMERIZATION ELECTROLYTICALLY

Harvey A. Hodes, James F. Sobieski, and Michael C. Zerner, Eatontown, N.J., assignors to the United States of America as represented by the Secretary of the Army

No Drawing. Filed Nov. 3, 1967, Ser. No. 681,062

Int. Cl. B01k *3/00;* **C07b** *29/06*

U.S. Cl. 204—72 **12 Claims**

Polymerization is initiated electrolytically by passing a current through an electrochemical system comprised of a metallic anode, a cathode, the anode and cathode being immersed in an electrolytic solution containing an electrolyte and polymerizable monomers, the electrolytic solution being inert toward said anode on mere contact therewith, but solubilizing the anode when an electric current is passed. The metal ions formed on solubilization of the anode upon electrolysis are oxidized with a compound which forms free radicals, initiating polymerization.

3,573,181

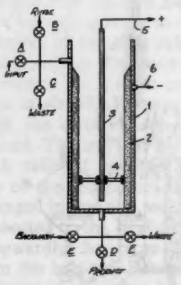
ELECTROLYTIC REDUCTION OF IRON

Linden W. Cochran, Basking Ridge, N.J., assignor to Multi-Minerals Limited, Toronto, Ontario, Canada

Filed Feb. 7, 1968, Ser. No. 703,648

Int. Cl. B01k *1/00*

U.S. Cl. 204—103 **6 Claims**



The present invention is directed to the reduction of multivalent cations in acidic solutions, such as phosphate

solutions, to a lower oxidation state by electrolysis of the solution and capture of the cation in said lower oxidation state by an ion exchange resin.

3,573,182

PROCESS FOR SEPARATING ZINC AND COPPER

Philip E. Churchward and Samuel Ralph Borrowman, Salt Lake City, Utah, assignors to the United States of America as represented by the Secretary of the Interior

Filed Jan. 11, 1968, Ser. No. 697,213
Int. Cl. C22d *1/22*; C22b *15/12*
U.S. Cl. 204—119 6 Claims

Zinc is preferentially extracted from solutions containing copper and zinc ions using a calcium salt of an organic hydrogen phosphate. A complete process including the selective extraction and the recovery of zinc and copper from the organic and aqueous phases respectively is described.

3,573,183

IRRADIATION POLYMERIZATION OF ETHYLENE USING A TERTIARY BUTYL ALCOHOL MEDIUM

Tsutomu Kagiya, Kyoto-shi, and Hiroshi Mitsui, Sueo Machi, Fujo Suganuma, and Miyuki Hagiwara, Takasaki-shi, Japan, assignors to Japan Atomic Energy Research Institute

No Drawing. Filed Nov. 24, 1967, Ser. No. 685,256
Claims priority, application Japan, Nov. 25, 1966, 41/76,857
Int. Cl. C08d *1/04, 3/02*
U.S. Cl. 204—159.22 9 Claims

This invention is directed to the radiation induced polymerization of ethylene in which tertiary butyl alcohol is used as the reaction medium. Various solvents have been considered as a reaction medium for the radiation induced polymerization of ethylene to be carried out under high reaction pressure, and it has been found that tertiary butyl alcohol is the medium which produces high molecular weight products in high yield and gives the greatest rate of polymerization reaction.

3,573,184

PROCESS FOR PREPARING CARBOHYDRATES

Matilda M. Brooks, Berkeley, Calif., assignor to Kent H. Steffgen, Oakland, Calif.

No Drawing. Filed Nov. 15, 1968, Ser. No. 776,256
Int. Cl. B01j *1/10, 1/12*
U.S. Cl. 204—160.1 6 Claims

The specification relates to a process for the synthetic preparation of basic plant carbohydrates. In this process, a mixture of magnesium and carbon dioxide dissolved in water is placed in a source of ultraviolet wave lengths to form a highly energized polyatomic CH_2O free radical. The CH_2O free radical is then placed in darkness to provide the desired carbohydrate.

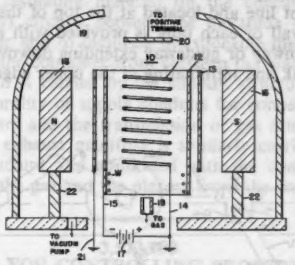
3,573,185

ANODIC SPUTTERING

Thomas A. Jennings, West Collingswood, N.J., and William McNeill, Philadelphia, Pa., assignors to the United States of America as represented by the Secretary of the Army

Filed Dec. 16, 1968, Ser. No. 783,885
Int. Cl. C23c *15/00*
U.S. Cl. 204—192 20 Claims

Processes for anodizing or sputtering metal anodes, or for sputtering and anodizing valve metal anodes such as tantalum substantially simultaneously, by electrically connecting the anode in a vacuum vessel and controllably impacting the anode with negative ions. Anodization will occur when lower voltages are employed to propel the negative ions toward the anode whereas higher voltages will result in sputtering of the anode.



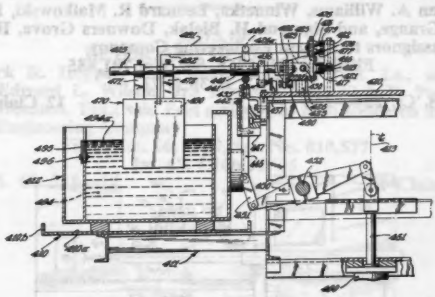
Intermediate voltages will produce the phenomenon of sputtering and anodization of suitable surfaces.

3,573,186

CONVEYER TYPE ELECTROPLATING APPARATUS

James N. Ryerson, Oceanport, David S. Ackerman, Linden, and Arnold E. Kream, Clark, N.J., assignors to Sel-Rex Corporation, Nutley, N.J.

Continuation-in-part of applications Ser. No. 310,274, Sept. 20, 1963, and Ser. No. 433,029, Feb. 16, 1965. This application Feb. 2, 1968, Ser. No. 702,706
Int. Cl. C23b *5/68*; B65g *49/00*
U.S. Cl. 204—203 15 Claims



In the illustrated embodiments precious metal plating is carried out by a loop series of tanks on a table, small electronic components being automatically individually partially immersed so as to plate predetermined portions of the components. Multiple parts may be treated by quick disconnect fixtures with precise locating surfaces. The entire machine may be sold as a complete package requiring a minimum of site preparation. The same machine may be adapted to barrel plating operation.

3,573,187

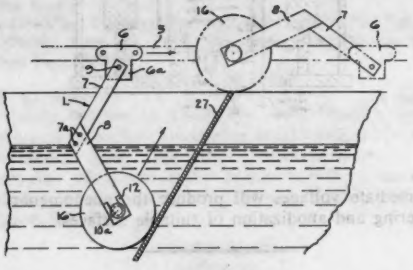
APPARATUS FOR PROCESSING ARTICLES

Frederick W. Stakelbeck, Philadelphia, Pa., assignor to Philadelphia Rust-Proof Company, Philadelphia, Pa.

Filed May 6, 1969, Ser. No. 822,146
Int. Cl. B01k *3/00*; C23b *5/68*
U.S. Cl. 204—203 9 Claims

This invention relates to apparatus adapted to transport continuously a plurality of articles suspended on removable work-supports through a series of longitudinally

aligned chambers or tanks for suitably processing the articles successively in the aligned chambers. The work-supports are conveyed by a pair spaced horizontally positioned endless parallel travelling chains or belts extending in a straight line and located at the top of the tanks. The rear end wall of each tank is provided with a sloping or inclined runway or guideway extending downwardly within each tank and terminating at the upper edge thereof. A



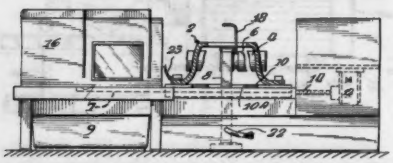
plurality of spaced pairs of freely rotatable guide wheels are carried on swingable levers which are hinged on spaced links of the conveyor chains. The guide wheels are adapted to make rolling contact with the sloping guideways of each chamber or tank and to travel upwardly on said guideways until they reach the top of the chamber or tank and then automatically drop by gravity into the next adjacent chamber.

3,573,188

ELECTROCHEMICAL MACHINE APPARATUS

Lynn A. Williams, Winnetka, Leonard R. Malkowski, La Grange, and Sigmund H. Bielak, Downers Grove, Ill., assignors to Anocut Engineering Company

Filed Jan. 31, 1968, Ser. No. 701,885
Int. Cl. B23p *1/02*
U.S. Cl. 204—224 **12 Claims**



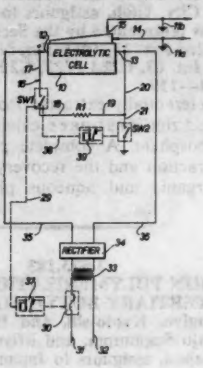
An electrolytic demetallizing apparatus for shaping a workpiece which is held by a table on a work-supporting surface. An elongated member extends upwardly through an aperture in the table in a direction generally perpendicularly to the work-supporting surface, and carries an electrolytic shaping cathode which is used to erode a workpiece. Generally, the table is rotatable about an axis perpendicular to the work-supporting surface to permit the workpiece to be rotated with respect to the cathode for ease in presenting the location to be shaped on the workpiece to the shaping cathode. The table or the elongated member is capable of moving in a direction generally parallel to the work-supporting surface to bring the shaping cathode into close proximity with the workpiece, while pressurized liquid electrolyte is passed through the shaping cathode and between the workpiece and the cathode, and a D.C. voltage is maintained across said workpiece and said shaping cathode in a sense to make the workpiece anodic.

3,573,189

ELECTRICAL BUS BAR GROUNDING

Göthe O. Westerlund, Vancouver, British Columbia, Canada, assignor to Chemech Engineering Ltd., Vancouver, British Columbia, Canada

Filed Oct. 17, 1967, Ser. No. 675,935
Int. Cl. B01k *3/0*; C01b *11/26*
U.S. Cl. 204—228 **3 Claims**



A system is provided for dissipating the residual charge in an electrolytic cell. The system includes an external circuit having a normally open switch and resistor in series, connected across the positive and negative poles of the electrolytic cell. The system also includes a grounding circuit, operative after the external circuit has been completed by closing the normally open switch.

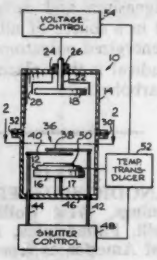
An improved method of operating an electrolytic cell is provided which involves grounding the positive and negative terminals after the power input to the cell has been shut off.

3,573,190

APPARATUS FOR DEPOSITING SEMICONDUCTOR MATERIAL AND FORMING SEMICONDUCTOR JUNCTIONS

Murray Bloom, Los Angeles, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Original application July 7, 1966, Ser. No. 563,467, now Patent No. 3,480,535, dated Nov. 25, 1969. Divided and this application Oct. 31, 1968, Ser. No. 772,231
Int. Cl. C23c *15/00*
U.S. Cl. 204—298 **4 Claims**



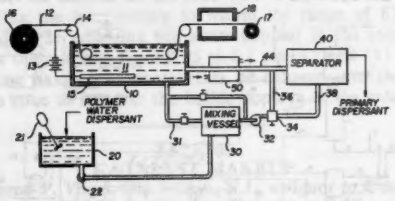
There is disclosed an apparatus for sputter depositing a layer of semiconductor material from a cathode onto a semiconductor substrate through a molten metal alloy layer on the substrate. Means are provided to sense the temperature of the substrate in order to control means for shielding the alloy layer until the substrate reaches a temperature such that the surface of the substrate itself is slightly below the melting point of the material to be

deposited whereas the surface of the molten layer is maintained by the sputtering apparatus at a temperature which is above the melting point of the material to be sputter deposited. The apparatus thus assures that the sputtered material will dissolve into the alloy at its high temperature surface and crystallize out onto the surface of the substrate.

3,573,191
APPARATUS FOR RECONSTITUTING ELECTROCOATING BATHS

Joseph M. De Vittorio, Homewood, Ill., assignor to The Sherwin-Williams Company, Cleveland, Ohio

Original application Aug. 24, 1967, Ser. No. 662,997, now Patent No. 3,499,828, dated Mar. 10, 1970. Divided and this application Nov. 17, 1969, Ser. No. 871,302
Int. Cl. B01k *5/02;* **C23b** *13/00*
U.S. Cl. 204—300 **8 Claims**

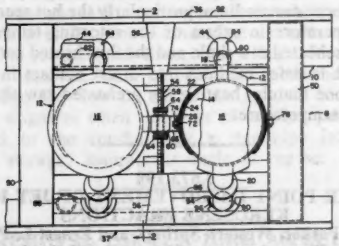


System for adding replenishment coating material to an electrocoating bath. Electrocoating tank containing dispersion of organic polymeric material in aqueous bath is operated to deposit polymeric coating on conducting surfaces using electrical potential. Coating material is dispersed by primary dispersant to form stable aqueous make-up liquid. Make-up mixed with electrocoating bath containing secondary dispersant. Primary dispersant is minimized in the reconstituted bath while secondary dispersant remains in relatively fixed concentration in the electrocoating bath.

3,573,192
PLASMA GENERATING APPARATUS

Richard L. Bersin, Kensington, and Harvey James Beaudry, Fremont, Calif., assignors to International Plasma Corporation

Filed Aug. 19, 1968, Ser. No. 753,682
Int. Cl. B01k *1/00;* **C01b** *13/12*
U.S. Cl. 204—312 **10 Claims**



A plasma, or ionized gas, generating apparatus for reaction of the plasma with non-gaseous substances in a container, the apparatus having a support structure defined by spaced apart support plates which are interconnected by a plurality of posts. A pair of elongate electrode plates for each container is mounted on the support structure so that at least one of the plates can be moved toward and into engagement with the container for grasping the container and mounting it on the apparatus. The electrode plates have a concave configuration to grasp the container and include a layer of an electrically insulating material on the concave side to prevent short circuits between the electrode plates and the container and to facilitate the slideable insertion and removal of the container from between the plates. A supply manifold is carried by the support structure and includes a plurality of supply conduits for connection with the containers and the transmission of gas into the containers. An exhaust manifold is similarly carried by the support structure and connected with the container for removal of the gas and the plasma from the container.

3,573,193
METHOD FOR CONTROLLING PROPERTIES OF MAGNETIC FILM

John V. Powers, Shenorock, and Lubomyr T. Romankiw, Millwood, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

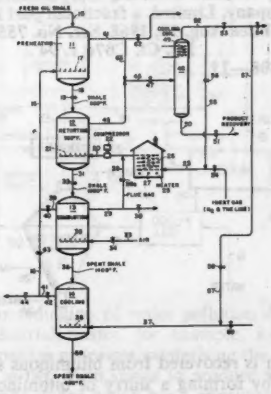
Filed Dec. 4, 1968, Ser. No. 780,960
Int. Cl. C23f *17/00;* **C23b** *5/34*
U.S. Cl. 204—38 **5 Claims**

A method for controlling magnetic properties of magnetic films by controlling the roughness of the substrate surface onto which the magnetic film is deposited. On one hand the coercivity may be varied although the magnetic film thickness is being kept constant, on the other hand constant values of coercivity can be obtained even though the thickness of the magnetic film may vary. The substrate consists of a conductive ground plate coated with a thin layer of insulating material and thereafter copper plated. Prior to the deposition of the magnetic film, the copper surface is treated by electro pulse plating including reverse pulsing to obtain a well defined and controlled surface roughness.

3,573,194
RETORTING OF OIL SHALE

Jack R. Hopper, East Baton Rouge Parish, La., and Edward L. Wilson, Jr., Baytown, and Nick P. Peet, Houston, Tex.; said Peet assignor to Esso Research and Engineering Company

Filed Mar. 26, 1969, Ser. No. 810,577
Int. Cl. C10b *53/06*
U.S. Cl. 208—11 **11 Claims**

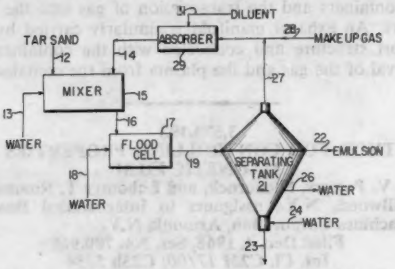


Shale oil of improved quality is recovered from oil shale retorted in a plural stage retorting system at an elevated temperature in the presence of an inert gas under an elevated pressure.

3,573,195
ADDITION OF LIGHT HYDROCARBON GAS TO TAR SAND

Clement W. Bowman, Edmonton, Alberta, and Douglas S. Montgomery, Ottawa, Ontario, Canada, assignors to Cities Service Athabasca, Inc., Imperial Oil Limited, Atlantic Richfield Corporation, and Royalite Oil Company, Limited, a fractional part interest to each

Filed Aug. 28, 1968, Ser. No. 755,974
Int. Cl. C07q *1/04*
U.S. Cl. 208—11 **7 Claims**

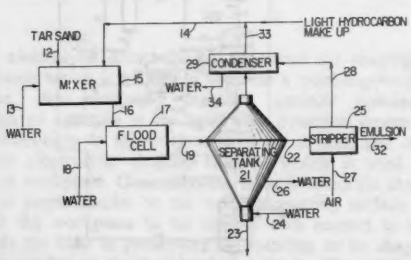


Bitumen is recovered from bituminous sand by forming a fluid slurry of bituminous sand, water and liquid hydrocarbon diluent having normally gaseous hydrocarbon material dissolved therein at a temperature less than about 110° F., preferably between 80 and 110° F. The slurry is then introduced into a body of water maintained in a separation zone at a temperature greater than 150° F. usually between 150 and 200° F. so that the gaseous hydrocarbon comes out of the solution and aids in floatation of the bitumen to the top of the water while sand settles to the bottom for removal therefrom. Normally gaseous hydrocarbons including ethane, methane and propane may be used and are preferably used in amounts between about 0.5 and about 2.0 standard cubic feet of gas per standard cubic foot of bitumen. The liquid hydrocarbon diluent preferably boils between 200 and 500° F. and is used in amounts between about 1 and about 10 wt. percent based upon bitumen.

3,573,196
USE OF LIGHT HYDROCARBONS IN TAR SAND PROCESSING

Lubomyr M. O. Cymbalisty, Edmonton, Alberta, Canada, assignor to Cities Service Athabasca, Inc., Imperial Oil Limited, Atlantic Richfield Corporation, and Royalite Oil Company, Limited, a fractional part interest to each

Filed Aug. 28, 1968, Ser. No. 755,976
Int. Cl. C07q *1/04*
U.S. Cl. 208—11 **7 Claims**

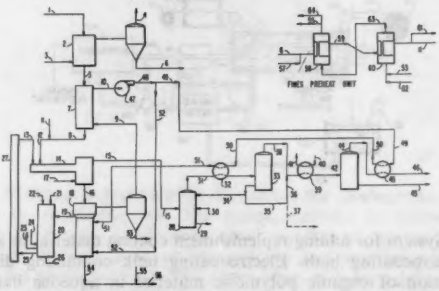


Bitumen is recovered from bituminous sand containing the same by forming a slurry of bituminous sand, water and normally liquid hydrocarbon material at a temperature below the boiling point of the hydrocarbon material. The slurry is then introduced into a body of water maintained at a temperature above the boiling point of the hydrocarbon material so that the hydrocarbon material evolves as a gas and aids in floating bitumen to the top of the water for recovery therefrom. The slurry is preferably formed at a temperature at least 10° F. below the boiling point of the hydrocarbon material, preferably between 80 and 140° F. while the body of water is preferably maintained at least about 10° F. above the boiling point of the hydrocarbon material, preferably between 140 and 210° F. C_6 hydrocarbons, such as normal or isohexane boiling between about 120 and about 160° F. are preferred. Pressure is preferably maintained relatively constant, i.e. with variations less than five p.s.i. throughout the process and atmospheric pressure is preferred for convenience.

3,573,197
PROCESS FOR RETORTING OIL SHALE

Clyde E. Gessner, Tulsa, Okla., assignor to The Oil Shale Corporation, New York, N.Y.

Filed Dec. 6, 1968, Ser. No. 781,795
Int. Cl. C10b *53/06*
U.S. Cl. 208—11 **9 Claims**



A novel and thermally efficient process for retorting oil shale is provided which utilizes the heat in the spent shale and in the shale oil vapors to heat the raw shale without condensing shale oil vapors on the raw shale and witout contaminating the shale oil vapors with other gaseous material such as flue gas. The novel process of this invention comprises distilling shale oil vapors in a retorting zone from raw shale heated to a retorting temperature, separating hot spent shale from the retorting zone, passing a circulating stream of a normally gaseous hydrocarbon such as natural gas, propane, butane, or mixtures thereof in direct contact with hot spent shale separated from the retorting zone and in indirect heat exchange with the shale oil vapors, thereby heating the normally gaseous hydrocarbon to a high temperature, passing the circulating stream of said normally gaseous hydrocarbon thus heated to a high temperature into direct contact with raw shale, thereby preheating it, heating a particulate solid heat ransfer medium, particularly the hot spent shale, to a temperature in excess of the retorting temperature, passing preheated raw shale and the thus heated particulate solid heat transfer medium into direct contact in the retorting zone thereby heating the preheated raw shale to a retorting temperature.

3,573,198
SMOKE POINT IMPROVEMENT OF JET FUEL KEROSENE FRACTIONS

Robin J. Parker, Western Springs, and Ernest L. Pollitzer, Skokie, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Feb. 10, 1969, Ser. No. 798,179
Int. Cl. C10g *23/02*
U.S. Cl. 208—89 **5 Claims**

A process for improving the jet fuel characteristics of sulfurous kerosene boiling range fractions. The improvement is especially noticeable in the IPT Smoke Point, the concentration of aromatic hydrocarbons and the concentration of sulfur. A two-stage process wherein desulfuri-

zation of a sulfurous charge stock is effected in the first reaction zone at relatively mild severities which result in a normally liquid product effluent containing from about 15 to about 35 p.p.m. of sulfur by weight. Aromatic saturation is the principal reaction effected in the second reaction zone having disposed therein a catalytic composite of alumina, a halogen component, a Group VIII noble metal component and a Group VII–B metallic component.

3,573,199

ACIDITY CONTROL FOR A REFORMING PROCESS

Charles S. McCoy, Orinda, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed June 16, 1969, Ser. No. 833,781
Int. Cl. C10g *35/08*
U.S. Cl. 208—139 **6 Claims**

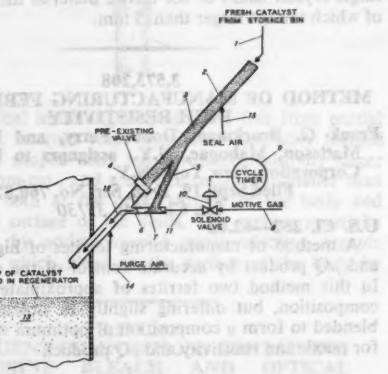
The halide content of a platinum containing catalyst is adjusted during a reforming process without discontinuance of contact of the feed with the catalyst by (1) adjusting the temperature to within the range of 675 to 725° F.; (2) adjusting the water content in the reaction within the range of from 0.05 to 0.1 p.s.i.a.; and (3) then injecting halogen or compounds of halogen into the reaction zone to increase the halide content of the catalyst.

3,573,200

CATALYST MAKEUP

Raymond P. Vogel, Old Bridge, N.J., assignor to Chevron Research Company, San Francisco, Calif.

Filed Dec. 4, 1968, Ser. No. 781,121
Int. Cl. C10g *13/16*
U.S. Cl. 208—173 **1 Claim**



Catalyst is added to a bed of catalyst in controlled amounts by an easily controlled system using, for example, motive air to move controlled amounts of catalyst through a conduit and then onto a bed of catalyst at regulated intervals. Catalyst flow is stopped when a cycle timer stops the flow of air to the conduit because the catalyst stagnates when the mass of catalyst particles introduced to the conduit (by a standpipe from fresh catalyst storage) assumes its angle of repose.

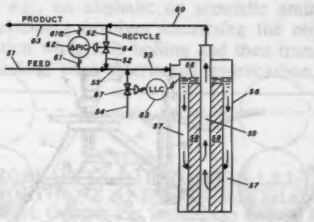
3,573,201

IRON REMOVAL USING A HIGH ASPECT RATIO BED OF CONTACT PARTICLES

Richard J. Annesser, Berkeley, John W. Scott, Jr., Ross, John F. Senger, Berkeley, and Alan G. Bridge, El Cerrito, Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Oct. 10, 1968, Ser. No. 766,604
Int. Cl. C10g *23/02, 23/16*
U.S. Cl. 208—251 **9 Claims**

Iron is removed from a hydrocarbon feed containing iron as soluble organometallic compounds by passing the hydrocarbon feed together with hydrogen at elevated temperature and pressure through a bed of contact particles, the bed being shaped so as to have a ratio of cross-sectional flow area to bed volume of at least 0.20. Preferably, the bed is an annulus of contact particles through which



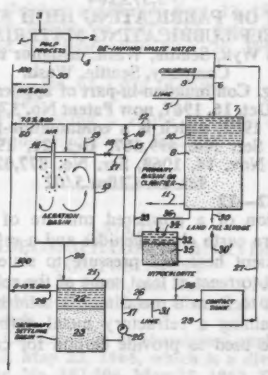
the hydrocarbon feed flows radially inward, or a bed of contact particles disposed in a horizontal cylindrical vessel. Preferably a major portion of the liquid effluent from the bed is recycled to the bed; and, particularly for radial flow operation, preferably the hydrogen is dissolved in the hydrocarbon feed.

3,573,202

PROCESS FOR REDUCTION OF WATER POLLUTION DUE TO DOMESTIC AND INDUSTRIAL WASTES

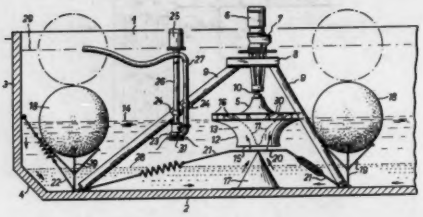
John Thomas Sobota and David Frederick Pagel, Green Bay, Wis., assignors to Fort Howard Paper Company

Filed Mar. 5, 1970, Ser. No. 16,811
Int. Cl. C02c *1/08*
U.S. Cl. 210—5 **16 Claims**



A process for reduction of water pollution due to domestic and industrial wastes, for example, waste from de-inked pulp making processes, comprising the treatment of such wastes in two main stages to produce a modified primary-secondary sludge which has a consistency of 20–25% solids, and is stable and odor free, as such useful for land fill. The sole liquid effluent is from the secondary stage which is 85%–95% free of pollutants, calculated as pounds of BOD of the initial de-inking wastes, thus resulting in a 7 to 20-fold decrease in pollutants.

3,573,203
METHOD AND APPARATUS FOR SEWAGE TREATMENT
Joseph Richard Kaelin, Villa Seeburg, Buochs, Nidwalden, Switzerland
Filed Sept. 17, 1968, Ser. No. 760,282
Int. Cl. C02c *1/10*
U.S. Cl. 210—14 **5 Claims**



A sewage treatment system comprises a tank containing sewage to be aerated and circulated by an aeration rotor partially immerged in the liquid contained in the tank. The aerator is suspended from a floating system which is floating on the liquid in the tank, so that the aerator can move up and down with the varying liquid level in the tank. At certain periods, as for example during the night when no sewage is supplied, the aerator is stopped so that sludge is allowed to settle to the bottom of the tank and clarified liquid can be withdrawn from the upper portion of the tank, while at daybreak when sewage begins to accumulate, the aerator is operated to diffuse atmospheric oxygen in the liquid in the tank and activate the sludge contained therein.

3,573,204
METHOD OF FABRICATING HIGH STRENGTH, SELF-LUBRICATING MATERIALS
Jan W. Van Wyk, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.
No Drawing. Continuation-in-part of application Ser. No. 675,328, Oct. 16, 1967, now Patent No. 3,479,289, dated Nov. 18, 1969, which is a continuation-in-part of application Ser. No. 499,367, Oct. 21, 1965. This application Nov. 14, 1969, Ser. No. 877,029
Int. Cl. C10m *5/02*
U.S. Cl. 252—12 **5 Claims**

Compaction of a powdered mixture of Group V–B, VI–B or rare earth chalcogenides and a refractory metal under sufficient heat and pressure to sinter the powder mixture and to react at least some of the refractory metal with carbon to form a metal matrix solid lubricant composite containing a refractory metal carbide. Graphite dies may be used to provide carbon for carbide formation.

3,573,205
DIISOCYANATE MODIFIED POLYISOBUTENYL-SUCCINIMIDES AS LUBRICATING OIL DETERGENTS
Warren Lowe and Yngve G. Hendrickson, El Cerrito, Calif., assignors to Chevron Research Company, San Francisco, Calif.
No Drawing. Filed Dec. 17, 1968, Ser. No. 784,463
Int. Cl. C10m *1/32*
U.S. Cl. 252—51.5 **4 Claims**

The reaction product of mono- and bis-succinimides of alkylene polyamines and diisocyanates are used as detergents in lubricating oils.

3,573,206
LUBRICANT COMPOSITIONS
Milton Braid, Westmont, and Derek A. Law, Pitman, N.J., assignors to Mobil Oil Corporation
No Drawing. Original application Mar. 28, 1966, Ser. No. 537,639, now Patent No. 3,509,214, dated Apr. 28, 1970. Divided and this application Sept. 16, 1969, Ser. No. 858,528
Int. Cl. C10m *1/32*
U.S. Cl. 252—51.5 **11 Claims**

The invention provides lubricating compositions containing oil-soluble products made by heating N-phenyl-naphthylamine, N - naphthyl - naphthylamine, mixtures thereof, or mixtures thereof with diphenylamine, in the presence of an oxidizing agent. The products impart improved antioxidant properties to said lubricating compositions.

3,573,207
MICROWAVE MAGNETIC MATERIALS WITH A HEXAGONAL STRUCTURE
Andre Deschamps, Paris, France, assignor to Société Lignes Telegraphiques et Telephoniques, Paris, France
Filed Feb. 20, 1969, Ser. No. 801,109
Claims priority, application France, Mar. 13, 1968, 143,450
Int. Cl. H01b *1/10*
U.S. Cl. 252—62.58 **2 Claims**

An hexagonal ferrite composition for microwave devices is obtained by double substitution of a part of the ferric ions in a conventional alkaline-earth ferrite ($MO, 6Fe_2O_3$) by couples of ½ (Ti^{4+}, Ni^{2+}) and Mn^{3+} or by triple substitution adding Al^{3+} to the two groups above. The manufacturing process includes sintering of single-crystal flakes of the ferrite material the dimensions of which are not larger than .5 mm.

3,573,208
METHOD OF MANUFACTURING FERRITES OF HIGH RESISTIVITY
Frank G. Brockman, Dobbs Ferry, and Kenneth E. Matteson, Mahopac, N.Y., assignors to U.S. Philips Corporation, New York, N.Y.
Filed Sept. 19, 1968, Ser. No. 760,872
Int. Cl. C04b *35/30*
U.S. Cl. 252—62.62 **5 Claims**

A method of manufacturing ferrites of high resistivity and μQ product by accurate control of the composition. In this method two ferrites of approximately the same composition, but differing slightly in stoichiometry, are blended to form a composition of optimum stoichiometry for maximum resistivity and μQ product.

3,573,209
INSULATING COMPOSITIONS AND MATERIALS
Robert de Dryver and André Marter, Notre-Dame-de-Gravenchon, France, assignors to Esso Standard Societe Anonyme Francaise, Paris, France
No Drawing. Filed July 14, 1964, Ser. No. 400,296
Claims priority, application France, July 22, 1963, 942,259
(Filed under Rule 47(a) and 35 U.S.C. 116)
Int. Cl. H01b *3/00*
U.S. Cl. 252—63 **5 Claims**

1. An oil composition suitable for the impregnation of tri-fibrous paper materials to form electrical insulators, said composition having a viscosity at 50° C. of about 2500 to about 2800 centistokes, a maximum viscosity at 100° C. of 150 centistokes, a tangent of loss angle at 100° F. of less than 0.0100, an increase of tangent of loss angle less than 100% and a decline in resistivity at 100° C. of less than 50% after bubbling air through the oil composition for 3 hours at 125° C., said composition tri-consisting essentially of a major amount of a mineral oil selected from the group consisting of naphthenic, semi-paraffinic and paraffinic oils, and within the

range of 0.1 to 50 wt. percent of a thermoplastic petroleum resin having a softening point in the range of 50° to 180° C., said resin being obtained by polymerizing a steam cracked petroleum distillate, or fraction thereof, boiling in the range of 30° to 280° C., in the presence of a Friedel-Crafts catalyst.

3,573,210

ELECTRIC INSULATING COMPOSITION CONTAINING AN ORGANIC SEMICONDUCTING MATERIAL

Hisatomo Furusawa and Tadaaki Kuhara, Yokohama, and Hironori Matsuba, Kawasaki, Japan, assignors to The Furukawa Electric Company Limited, Tokyo, Japan

Filed Dec. 5, 1967, Ser. No. 688,129
Claims priority, application Japan, Dec. 8, 1966, 41/80,069
Int. Cl. C08k *1/26;* H01b *3/18*
U.S. Cl. 252—64 **14 Claims**

An electrical insulating shaped body, free from partial discharge at internal voids which are inevitably formed therein. The shaped body has a volume resistivity larger than 10^{10} ohm-cm., and a surface resistivity smaller than 10^{12} ohms, both at the outer surface of the body and the internal surface of the voids. The surface resistivity is achieved by adding special semiconducting organic compounds, which bleed on the surface of the body by aging.

3,573,211

DETERGENT COMPOSITIONS CONTAINING CHLORINE BLEACH AND OPTICAL BRIGHTENERS

Reinhard Zweidler, Basel, Rudolf Keller, Riehen, near Basel, and Max Keller, Riehen, Switzerland, assignors to Geigy Chemical Corporation, Greenburgh, N.Y.

Original application Sept. 23, 1965, Ser. No. 489,655. Divided and this application Nov. 16, 1967, Ser. No. 714,371
Int. Cl. C11d *7/54;* D06l *3/00*
U.S. Cl. 252—95 **7 Claims**

Detergent compositions having improved storage stability contain a detergent, a chlorine yielding bleaching agent and a bleach-stable optical brightener selected from a particular group of chlorine substituted mononaphtho-triazoles.

3,573,212

CLEANSING COMPOSITION AND METHOD

Rafael Foguet Ambros, Flix, Spain, assignor to Electro-Quimica de Flix, S.A., Barcelona, Spain

No Drawing. Filed Jan. 9, 1968, Ser. No. 696,511
Int. Cl. C11d *1/18, 1/38, 1/50, 3/26*
U.S. Cl. 252—153 **9 Claims**

A cleansing composition for removing oils, greases, dust, dirt as well as water from non-porous objects to prepare them for phosphatizing, electroplating, enameling, glazing, lacquering or painting which comprises a chlorinated ethylene such as trichloroethylene or perchloroethylene, from 0.1 to about 1.5 percent by weight of a non-ionic surface active agent, such as an addition product of ethylene oxide with an alkyl phenol, fatty alcohol or fatty acid, and preferably 2 to 100 parts per million of an amine fixer, e.g., an aliphatic or aromatic amine. The method of cleansing involves immersing the objects in this composition while it is boiling and then transferring them to a boiling, pure chlorinated hydrocarbon.

3,573,213

AZEOTROPE OF 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE AND NITROMETHANE

James G. Burt, Oxford, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 18, 1968, Ser. No. 698,799
Int. Cl. C09d *9/00;* C11d *7/50;* C23g *5/02*
U.S. Cl. 252—172 **2 Claims**

An azeotrope of about 97.1 weight percent 1,1,2-trichloro-1,2,2-trifluoroethane and about 2.9 weight percent nitromethane, useful in vapor degreasing and cleaning applications. The presence of nitromethane inhibits reaction of the 1,1,2-trichloro-1,2,2-trifluoroethane with zinc to produce unsaturated halocarbons and inhibits aluminum corrosion as well as stress-corrosion cracking of titanium alloys. Mixtures wherein the nitromethane is present in greater than azeotropic amounts are flammable; while mixtures wherein the nitromethane is much less than azeotropic amounts are not as effective with respect to most of the inhibiting properties of the azeotrope.

3,573,214

PROCESS FOR PREPARING STABLE DIMETHYL SULFOXIDE-HYDROGEN FLUORIDE MIXTURE

Janos Kollonitsch, Westfield, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

No Drawing. Original application Sept. 12, 1966, Ser. No. 578,518, now Patent No. 3,471,512, dated Oct. 7, 1969. Divided and this application Nov. 26, 1968, Ser. No. 791,834
Int. Cl. C07c *147/00*
U.S. Cl. 252—182 **3 Claims**

Process for preparing a stable solution of dimethyl sulfoxide in liquid hydyrogen fluoride.

3,573,215

TETRABROMOPHTHALIC ANHYDRIDE COMPOSITIONS

Richard C. Nametz, St. Louis, and Robert J. Nulph, Alma, Mich., assignors to Michigan Chemical Corporation, St. Louis, Mich.

No Drawing. Continuation of abandoned application Ser. No. 551,883, May 23, 1966, which is a division of application Ser. No. 282,208, May 22, 1963. This application June 6, 1968, Ser. No. 739,935
Int. Cl. C09k *3/00;* C08f *5/00*
U.S. Cl. 252—192 **12 Claims**

Compositions of impure, oleum produced tetrabromophthalic anhydride with small amounts of inorganic and organic bases and salts are described. Impure, oleum produced tetrabromophthalic anhydride contains catalytic acidity occluded in the crystals which interferes with the reaction of tetrabromophthalic anhydride with polyols to produce polyester compositions because of side reactions which cyclize the polyols. Small amounts of inorganic and organic bases and salts are used to deactivate the catalytic acidity. The compositions are particularly useful for preparing polyester resins.

3,573,216

HETEROCYANOACRYLATE U.V. ABSORBERS

Albert F. Strobel, Delmar, and Sigmund C. Catino, Castleton, N.Y., assignors to GAF Corporation, New York, N.Y.

No Drawing. Continuation of application Ser. No. 269,743, Apr. 1, 1963. This application Jan. 24, 1967. Ser. No. 611,471

The portion of the term of the patent subsequent to Nov. 2, 1982, has been disclaimed

Int. Cl. G02b *5/22*

U.S. Cl. 252—300 18 Claims

U.V.-degradable organic material containing an amount sufficient to prevent such degradation of certain heterocyanoacrylate U.V. absorbers.

3,573,217

METHOD OF PREPARING A STABLE MIXED SOL OF HEXAVALENT URANIUM AND TETRAVALENT THORIUM BY PEPTIZATION

Theo van der Plas, Vondellaan 41, Arnhem, Netherlands; Johannes B. W. Kanij, Da Costastraat 16, Zevenaar, Netherlands; Arend J. Noothout, Woudstralaan 1, Oosterbeek, Netherlands; and Marie E. A. Hermans, Diependalstraat 4, Arnhem, Netherlands

No Drawing. Continuation-in-part of application Ser. No. 635,379, May 2, 1967. This application June 30, 1969, Ser. No. 837,884

Int. Cl. C09k *3/00*

U.S. Cl. 252—301.1 5 Claims

Method of preparing a stable mixed sol of hexavalent uranium and tetravalent thorium, and the gels, oxides and carbide that can be prepared from this mixed sol.

A method of preparing a stable mixed sol containing hexavalent uranium oxide and tetravalent thorium oxide, without resorting to the expensive process of reduction with hydrogen or other reducing agents in the liquid phase by peptizing a hydroxide precipitate.

3,573,218

LIQUID SCINTILLATION COUNTING COMPOSITION AND PROCESS

Royal H. Benson, Texas City, Tex., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation-in-part of abandoned applications Ser. No. 607,218 and Ser. No. 607,219, both filed Jan. 4, 1967. This application Apr. 11, 1968, Ser. No. 720,451

Int. Cl. F21k *2/00;* C09k *1/00;* C07c *43/20*

U.S. Cl. 252—301.2 16 Claims

Liquid scintillation counting compositions comprising an aromatic hydrocarbon solvent, a scintillation solute and an ethoxylated alkyl phenol having from 7 to 16 carbon atoms in the alkyl substituent and a ratio of carbon atoms in the alkyl substituent to the average number of ethoxy groups of from 0.83 to 1.67.

3,573,219

METHOD OF TREATING A LIQUID SCINTILLATOR COMPOSITION

Royal H. Benson, Texas City, Tex., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed May 7, 1969, Ser. No. 822,742

Int. Cl. G01t *1/20;* C09k *1/02*

U.S. Cl. 252—301.2 30 Claims

A method for treating a liquid scintillator composition or the liquid vehicle used therein, said vehicle comprised of a hydrocarbon solvent, and an ethoxylated alkyl phenol, said composition comprised of said liquid vehicle and a scintillation solute comprising contacting said vehicle or composition with a basic treating agent for a time sufficient to reduce chemiluminescence to a level acceptable for the counting of basic samples.

3,573,220

LIQUID SCINTILLATOR COMPOSITIONS FOR COUNTING THERMAL NEUTRONS

Royal H. Benson, Texas City, Tex., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation-in-part of application Ser. No. 720,451, Apr. 11, 1968. This application Feb. 4, 1969, Ser. No. 796,603

Int. Cl. C09k *1/00;* F21k *2/02;* G01t *1/20*

U.S. Cl. 252—301.3 17 Claims

A scintillator composition for liquid scintillation counting and detection of thermal neutrons comprising (1) a scintillator solution comprised of an aromatic hydrocarbon solvent, a scintillation solute and an ethoxylated alkyl phenol, and (2) a loading agent comprised of an aqueous solution of a compound of an element having high thermal-neutron-capture efficiency, said element interacting with such neutrons resulting in the production of an exo-ergic nuclear reaction.

3,573,221

THERMOLUMINESCENT LITHIUM BORATE

Robert Thompson Brunskill, Cumberland, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Nov. 30, 1967, Ser. No. 686,887

Claims priority, application Great Britain, Dec. 14, 1966, 56,019/66; Aug. 4, 1967, 37,330/67

Int. Cl. C09k *1/66;* G01t *1/11*

U.S. Cl. 252—301.4 6 Claims

A process for the manufacture of thermoluminescent lithium borate in which lithium tetraborate is doped with manganese and the doped lithium tetraborate is melted and resolidified in an argon atmosphere.

3,573,222

DEFOAMING COMPOSITION, ITS USE AND PROCESS FOR ITS PREPARATION

George Conrad Harrison, Jr., Wayne, and Anthony Joseph Stumpo, Philadelphia, Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

No Drawing. Continuation-in-part of application Ser. No. 655,738, July 25, 1967, which is a continuation-in-part of application Ser. No. 571,984, Aug. 12, 1966. This application July 2, 1969, Ser. No. 857,249

(Filed under Rule 47(a) and 35 U.S.C. 116)

Int. Cl. B01d *19/04*

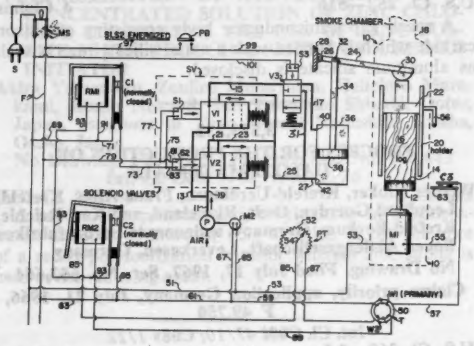
U.S. Cl. 252—321 11 Claims

Composition useful for defoaming consisting essentially of from about 70 to about 95 parts by weight of a hydrocarbon fluid and from about 5 to about 30 parts by weight of a synthetic alkali metal or alkaline earth metal silico aluminate having an average particle size no greater than about 200 millimicrons, said silico aluminate having been made hydrophobic while in said hydrocarbon or halocarbon fluid by reaction at a temperature not exceeding about 75° C. with about 7% to about 30% by weight of said silico aluminate of a halosilane.

3,573,223
SMOKE GENERATOR WITH AUTOMATIC CONTROL SYSTEM THEREFOR

Chester A. Anderson, McHenry, Ill., assignor to Speco, Inc., Schiller Park, Ill.

Filed Oct. 14, 1968, Ser. No. 767,267
Int. Cl. B01d; B01f; B01j *13/00*
U.S. Cl. 252—359 **8 Claims**



A control system for a friction-type smoke generator wherein the pressure which is exerted by the wooden smoke-producing block against the usual rotating friction wheel is regulated according to the electrical current which is supplied to the motor for driving the friction wheel.

3,573,224
PRODUCTION OF HYDROGEN-RICH SYNTHESIS GAS

Samuel Strelzoff and John M. Connor, New York, N.Y., and Herbert C. Morgenstern, Westwood, N.J., assignors to Chemical Construction Corporation, New York, N.Y.

Filed Nov. 14, 1967, Ser. No. 682,825
Int. Cl. C01b *2/02*
U.S. Cl. 252—376 **18 Claims**

A gaseous hydrocarbon such as methane or vaporized naphtha is passed through a first fluid bed of hot solid particulate material at a temperature above 700° C., to crack a portion of the hydrocarbon stream into hydrogen and solid free carbon, with concomitant deposition of the free carbon which may coat the solid particles, and the formation of a gaseous mixture of hydrogen and residual gaseous hydrocarbon. Steam is added to the gaseous mixture, and the combined gaseous mixture is passed through a second fluid bed at a temperature above 850° C., to react residual gaseous hydrocarbon with steam and form further hydrogen and carbon monoxide. A product hydrogen-rich synthesis gas stream principally containing hydrogen, carbon monoxide and steam is removed from the second bed. A stream of hot solid particulate material is passed from the second bed to the first bed, to maintain a temperature level above 700° C. in the first bed; and a corresponding stream of solid particulate material containing deposited and entrained solid carbon is removed from the first bed and passed to a third bed in a stream of air, which may react with the carbon to produce temperature rise. In the third bed, the solid particulate material is reheated to a temperature above 1000° C., by combustion of a fluid hydrocarbon fuel and deposited or entrained solid carbon with air in the bed. A third stream of reheated solid particulate material is passed from the third bed to the second bed, to maintain the second bed at a temperature above 850° C. and compensate for the stream of material passed from the second bed to the first bed. The air stream used to pass solid particulate material from the first bed to the third bed reacts with deposited solid carbon to form a gaseous phase containing carbon monoxide and nitrogen. When the process is employed to produce ammonia synthesis gas, this gaseous phase is separated from the solid particles and combined with the main product hydrogen-rich synthesis gas, to form a combined gas stream suitable for conversion to ammonia synthesis gas.

3,573,225
RUST-PROOFING COMPOSITE SOLUTIONS

Masahiko Kondo, 3–14–7 Maechi, Saitama Prefecture, Urawa, Japan, and Tetsuo Shimmura, 27 Futaba-cho, Itabashi-ku, Tokyo, Japan

No Drawing. Filed Feb. 1, 1968, Ser. No. 702,209
Int. Cl. C23f *11/14, 11/10*
U.S. Cl. 252—392 **6 Claims**

Rust-proofing aqueous or alcoholic composite solutions for application to metal surfaces consisting essentially of an amine salt of a fatty acid, an alkali metal salt of benzoic acid and an alkanolamide.

3,573,226
MOLYBDENUM-CONTAINING CATALYST SOLUTIONS AND METHOD OF MAKING AND USING SAME

Harold A. Sorgenti, Drexel Hill, Pa., assignor to Atlantic Richfield Company, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 647,941, June 22, 1967. This application Apr. 2, 1969, Ser. No. 812,845
Int. Cl. C07d *1/08*
U.S. Cl. 252—431 **3 Claims**

Method for the preparation of molybdenum-containing epoxidation catalyst solutions by heating molybdenum powder with a stream containing unreacted tertiary butyl hydroperoxide used in the epoxidation process as the oxidizing agent and polyhydric compounds of from about 200 to 300 molecular weight and having from 4 to 6 hydroxyl groups per molecule, the polyhydric compound being formed as a by-product in the epoxidation process, the catalyst solution produced by such method and olefin epoxidation processes utilizing such catalyst solutions as the catalyst therefore.

3,573,227
ABSORBENT FOR CARBON DIOXIDE

Michel Rio, Champigny, France, assignor to L'Air Liquide, Societe Anonoyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Continuation-in-part of application Ser. No. 677,085, Oct. 23, 1967. This application Jan. 31, 1969, Ser. No. 795,463
Claims priority, application France, Dec. 19, 1968, 179,202
Int. Cl. B01j *11/58*
U.S. Cl. 252—454 **2 Claims**

An absorbent for carbon dioxide comprising a mineral which has an expanded lamellar structure and which is hydrophilic and inert to carbon dioxide which has been coated by a layer of sodium hydroxide sprayed thereon in molten state in such a manner that it solidifies almost instantaneously without any attack of the mineral by the sodium hydroxide at the fusion temperature.

3,573,228

PREPARATION OF CATALYSTS

Peter Desmond Holmes, Old Greenwich, Conn., and Arnold Fisher, Camberley, and Kenneth Hugh Bourne, Woking, England, assignors to The British Petroleum Company Limited, London, England

No Drawing. Continuation of application Ser. No. 553,301, May 27, 1966. This application May 14, 1969, Ser. No. 827,097

Claims priority, application Great Britain, May 31, 1965, 22,976/65

Int. Cl. B01j *11/40*

U.S. Cl. 252—454 13 Claims

Ion-exchanged catalysts are prepared by first exchanging hydrogen atoms on an oxide support with alkaline cations, and then exchanging the alkaline cations with cations having potential catalytic activity.

The method is particularly suitable for supports without strong protons (e.g. silica) and the preferred cations having catalytic activity are nickel ions. The cations of e.g. nickel may be subsequently reduced to the elemental metal.

3,573,229

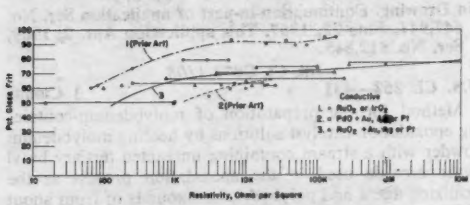
CERMET RESISTOR COMPOSITION AND METHOD OF MAKING SAME

Darwyn L. Herbst, Smithtown, and William L. Dawson, East Setauket, N.Y., assignors to Alloys Unlimited, Inc., Melville, N.Y.

Filed Jan. 30, 1968, Ser. No. 701,611

Int. Cl. H01b *1/02;* B44d *1/02*

U.S. Cl. 252—514 17 Claims



The field of cermet resistors is reviewed, problems associated therewith are discussed, and the efforts of certain prior workers are summarized. An improved resistance composition is described employing, as the conductive fraction, a mixture of gold, silver or platinum with the oxide of iridium or ruthenium. Resistors are produced having excellent noise, TCR and other properties at resistances of up to 10 megohms per square, and in no instance is frit content higher than about 78%. The method of producing these resistors in a readily reproducible manner is detailed, and their properties are illustrated.

3,573,230

ELECTRICALLY CONDUCTIVE, LOW FRICTION FLUOROCARBON POLYMER COATING METHOD

Alexander J. Van Voorhees, Port Huron, Mich., assignor to Acheson Industries, Inc., Port Huron, Mich.

No Drawing. Filed Oct. 16, 1968, Ser. No. 779,291

Int. Cl. H01b *1/02;* B44d *1/02*

U.S. Cl. 252—514 19 Claims

A method of forming an electrically conductive, high lubricity, fluorocarbon polymer (e.g., polytetrafluoroethylene) containing, adherent coating on a substrate; and coating composition.

3,573,231

SPARK GAP SEMICONDUCTOR

Bettadapur S. Subramanya, Richmond, Va., and John W. Riddel, Fenton, and Karl Schwartzwaller, Holly, Mich., assignors to General Motors Corporation, Detroit, Mich.

No Drawing. Original application Aug. 16, 1965, Ser. No. 480,182, now Patent No. 3,376,367, dated Apr. 2, 1968. Divided and this application Nov. 13, 1967, Ser. No. 701,497

Int. Cl. H01b *1/06;* C04b *35/14*

U.S. Cl. 252—516 4 Claims

A spark gap semiconductor body consisting of silicon carbide which is bonded with a metal silicate matrix such as aluminum silicate is disclosed.

3,573,232

PROCESS FOR THE PRODUCTION OF FOAMED MATERIALS

Werner Kloker, Krefeld-Uerdingen, Franz Alfes, Krefeld, Leonhard Goerden, Oedt, Rhineland, and Karl Raichle, Krefeld-Bockum, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed July 17, 1967, Ser. No. 653,664

Claims priority, application Germany, July 21, 1966, F 49,750

Int. Cl. C08f *47/10;* C08v *1/22*

U.S. Cl. 260—2.5 12 Claims

Improved process of producing foamed materials from a copolymerizable mixture of unsaturated polyesters and a monomeric polymerizable vinyl compound employing as foaming agent a carbonic acid ester anhydride wherein said foaming agent liberates carbon dioxide without the application of external heat by virtue of the presence of certain metal compounds.

3,573,233

PROCESS FOR THE PRODUCTION OF FOAMED MATERIALS

Franz Alfes, Krefeld, Werner Kloker, Krefeld-Uerdingen, Leonhard Goerden, Oedt, Rhineland, and Karl Raichle, Krefeld-Bockum, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed July 18, 1967, Ser. No. 654,065

Claims priority, application Germany, July 21, 1966, F 49,752

Int. Cl. C08f *47/10;* C08v *1/22*

U.S. Cl. 260—2.5 12 Claims

Improved process of producing foamed materials from a copolymerizable mixture of unsaturated polyesters and a monomeric polymerizable vinyl compound employing as foaming agent a carbonic acid ester anhydride wherein said foaming agent liberates carbon dioxide without the application of external heat by virtue of the presence of certain amine compounds.

3,573,234

FLEXIBLE AND HYDROPHILIC POLYURETHANE FOAM AND METHOD OF MAKING SAME

Alexis Archipoff, Carouge, Geneva, Switzerland, Jerome Dupuy, Calais, France, and Joerg Sambeth, Carouge, Geneva, Switzerland, assignors to Elekal, Paris, France

No Drawing. Filed Apr. 24, 1968, Ser. No. 723,889

Claims priority, application Switzerland, May 2, 1967, 6,331/67

Int. Cl. A47l *13/16;* C08g *22/46, 41/04*

U.S. Cl. 260—2.5 14 Claims

The invention consists in adding to the usual compounds involved in making a flexible open-cell polyurethane foam by the so-called "one-shot" method, from 5 to 20%, preferably 10 to 15%, by weight, in relation to

the amount of polyol that is used, of at least one alkaline salt of carboxymethyl hydroxyethyl cellulose in fine powder form, thereby to produce a polyurethane foam having improved hydrophilic properties.

A foam produced in this way may be modified by treating it is an additional step with an aqueous solution of a salt of a metal having a valence of at least 2, e.g., aluminum.

3,573,235

POLYMERIZATION OF ACRYLONITRILE IN A CONCENTRATED SOLUTION OF ZINC CHLORIDE COMPRISING THE USE OF ZINC SULFITE AS THE REDUCING AGENT OF A REDOX INITIATOR

Akira Yamamoto, Zenjiro Momiyama, Heiichiro Murakami, Kunio Nakaoji, and Tatsuhiko Shizuki, Ootsu, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

No Drawing. Filed Sept. 22, 1969, Ser. No. 860,043

Int. Cl. C08f *1/08, 1/13, 3/76*

U.S. Cl. 260—8 **6 Claims**

A process for polymerizing acrylonitrile in a concentrated aqueous solution of zinc chloride in the presence of a redox polymerization initiator wherein zinc sulfite is used as the reducing agent.

3,573,236

PAPER COATING COMPOSITIONS AND METHOD OF THEIR APPLICATION

David Osher Barlow, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Feb. 8, 1968, Ser. No. 703,915

Int. Cl. C08d *7/08;* **C08f** *45/06*

U.S. Cl. 260—17 **9 Claims**

Papers coated with an aqueous dispersion containing, per 100 parts of pigment, 1 to 3 parts of polyvinyl alcohol, 7 to 12 parts of a synthetic polymer, 0.5 to 1.5 parts of glyoxal and 0.05 to 0.5 part of a water-retention aid, provided the ratio of polyvinyl alcohol to synthetic polymer is no greater than 0.35, have improved printability characteristics while the optical and strength properties are not adversely affected.

3,573,237

DECORATIVE FINISH-PRODUCING COMPOSITION AND METHOD OF APPLYING SAME

John C. Zola, 2662 10th Ave., Arcadia, Calif. 91006

No Drawing. Continuation-in-part of application Ser. No. 615,044, Feb. 8, 1967, which is a continuation-in-part of application Ser. No. 201,274, June 11, 1962. This application Jan. 8, 1968, Ser. No. 696,253

Int. Cl. C08b *21/08, 21/12*

U.S. Cl. 260—16 **33 Claims**

A coating composition for selectively imparting a pattern of a desired design to a surface, with the pattern at least in part being determined by the mode of application of the composition to the surface. The composition includes two or more phases that are immiscible. The phases comprise miscible organic solvents that are rendered immiscible by dissolving incompatible organic film formers therein. By agitation, the composition assumes the form of a transient dispersion in which the first fluid component is in the form of tiny globules that may be invisible to the naked eye, but are characterized by the tendency thereof to coalesce at least in part into agglomerates of 25 microns or greater after the composition has been applied to a surface. The clusters are individually visible to the naked eye. The pattern the clusters assume and the decorative effect achieved is determined at least in part by the mode of application of the composition to the surface.

3,573,238

STYRENE AND VEGETABLE OIL MODIFIED PHENOLIC RESIN AND METHOD OF PREPARING THE SAME

Donald Joseph Albrinck and Victor Asfour, Cincinnati, Ohio, assignors to Formica Corporation, Cincinnati, Ohio

No Drawing. Continuation-in-part of application Ser. No. 630,509, Apr. 13, 1967. This application Sept. 15, 1969, Ser. No. 858,185

Int. Cl. C08g *5/20*

U.S. Cl. 260—19 **10 Claims**

A modified phenolic resinous material in which a plurality of reactants are successively reacted with a phenol and with the subsequent reaction products produced in which said phenol is successively reacted with a polymerizable styrene monomer, the reaction product thereof reacted with a vegetable drying oil, the reaction product thereof reacted with either formaldehyde and then certain diphenolic compounds or vice-versa, or both simultaneously and, finally, with one or more of certain aniline compounds under defined conditions and in defined amounts; the process of preparing such a phenolic resinous material and to its use in making a laminate.

3,573,239

FLOOR POLISHING COMPOSITIONS

Richard E. Zdanowski, Fort Washington, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Continuation-in-part of application Ser. No. 455,609, May 13, 1965, which is a continuation-in-part of application Ser. No. 98,744, Mar. 28, 1961. This application May 24, 1967, Ser. No. 640,851

Int. Cl. C08f *21/04;* **C08g** *17/16;* **C09f** *7/08*

U.S. Cl. 260—22 **18 Claims**

This invention relates to coating compositions, and especially to floor polishing compositions, which are particularly suitable for applying glossy finishes on wood, rubber, glass, tile and linoleum surfaces, either with or without paint or varnish finishes.

3,573,240

HOT MELT ADHESIVE COMPOSITIONS FOR HARD COVERED BOOKBINDING

Thomas P. Flanagan, Green Brook, N.J., assignor to National Starch and Chemical Corporation, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 692,710, Dec. 22, 1967. This application May 1, 1970, Ser. No. 33,906

Int. Cl. B42c *9/00;* **C08f** *29/12*

U.S. Cl. 260—23 **10 Claims**

Hot melt adhesive compositions comprising a blend of a high molecular weight, isotactic polybutylene resin, and a tackifying resin; the resulting compositions being especially applicable for use in a hard covered bookbinding but also utilizable in a variety of packaging, laminating and specialty hot melt applications. Hard covered books having their pages adhesively bound by means of the above specified hot melt compositions.

3,573,241

POLYMERIC COMPOSITIONS CONTAINING COKE GROUND IN A NON-OXIDIZING ATMOSPHERE

William W. Gotshall, Orchard Lake, Mich., assignor to Marathon Oil Company, Findlay, Ohio

No Drawing. Original application Mar. 4, 1965, Ser. No. 437,285, now Patent No. 3,404,019, dated Oct. 1, 1968. Divided and this application July 22, 1968, Ser. No. 774,551

Int. Cl. C08c *11/18;* **C08d** *9/00*

U.S. Cl. 260—23.7 **8 Claims**

Carbon ground in a non-oxidizing atmosphere and thereafter protected from oxidation is incorporated in rubber or other polymeric materials to provide compositions having low set, high modulus and non-staining properties.

3,573,242
POLYMERIZATION PROCESS TO FORM POLYVINYL FLUORIDE IN EMULSION FORM
Lacey E. Scoggins, Bartlesville, Okla., assignor to Phillips Petroleum Company
No Drawing. Filed Dec. 20, 1968, Ser. No. 785,756
Int. Cl. C08f 3/22
U.S. Cl. 260—29.6 **3 Claims**

Process for emulsion polymerization of vinyl fluoride in which an oxidant and reductant are employed but the oxidant is introduced after the desired polymerization temperatures and pressures are attained.

3,573,243
PROCESS FOR MODIFYING A RUBBER LATEX
Donald Alfred Bennett, Beaulieu, England, assignor to The International Synthetic Rubber Company Limited, Southampton, England
Continuation-in-part of applications Ser. No. 138,260, Sept. 15, 1961, and Ser. No. 412,345, Nov. 19, 1964. This application Oct. 6, 1966, Ser. No. 584,719
Int. Cl. C08d 5/00, 7/12
U.S. Cl. 260—29.7 **17 Claims**

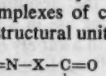
The process of reducing the viscosity of a stable rubber latex and increasing the average latex particle size of certain rubber latices, comprising forcing the latex through a constriction at a pressure drop of at least 750 p.s.i. and recovering the latex as a stable emulsion.

3,573,244
METHOD FOR OBTAINING ACID DYE UNIFORMITY IN POLYAMIDES
Phil H. Wilken, Dayton, Ohio, and Graham Leadbetter, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.
No Drawing. Filed Oct. 16, 1968, Ser. No. 768,189
Int. Cl. C08g 51/60, 51/66
U.S. Cl. 260—45.8 **3 Claims**

Polyamides having incorporated therein a small amount of a certain hindered phenol or a certain quinoline compound possess exceptional acid dye uniformity.

3,573,245
STABILIZED POLYAMIDES
Gerhard Mueller, Limburgerhof, Pfalz, and Helmut Doerfel and Hans Wilhelm, Ludwigshafen (Rhine), Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany
No Drawing. Filed Aug. 29, 1967, Ser. No. 663,942
Int. Cl. C08g 51/56
U.S. Cl. 260—45.75 **5 Claims**

Stabilization of polyamides by adding of iodine compounds and copper complexes of compounds containing twice to four times the structural unit:



in which X denotes a hydrocarbon radical having one or two carbon atoms.

3,573,246
PROCESS OF MODIFYING SYNTHETIC RUBBER LATICES
Donald Alfred Bennett, Beaulieu, England, assignor to The International Synthetic Rubber Company Limited, Southampton, England
Continuation-in-part of application Ser. No. 169,169, Jan. 23, 1962. This application Mar. 6, 1968, Ser. No. 710,981
Int. Cl. C08j 9/08, 5/00
U.S. Cl. 260—29.7 **6 Claims**

This invention relates to a process of increasing the particle size and modifying the particle size distribution of synthetic rubber latex in the presence of reinforcing agent such that an improved solids/viscosity relationship is obtained and the physical properties of rubber compounds prepared from the latex are improved. The process comprises flowing a mixture of synthetic rubber latex and finely divided reinforcing agent, under pressure through a constriction, the pressure drop across the constriction being not less than about 1000 p.s.i.g. The mixture has a total solids content not less than about 25% by weight and contains from about 15 to 50 parts by weight of reinforcing agent per 100 parts of rubber.

3,573,247
POLYUREA ELASTOMER SOLUTIONS IMPROVED BY ADDITIONS OF SPECIFIC INORGANIC SALTS
Ichiro Minobe, Ibaraki, and Keijiro Oda, Kobe, Japan, assignors to The Toyo Rubber Industry Co., Ltd., Osaka, Japan
No Drawing. Continuation-in-part of application Ser. No. 377,101, June 22, 1964. This application Oct. 11, 1967, Ser. No. 674,648
Claims priority, application Japan, July 13, 1963, 38/38,368
Int. Cl. C08f 45/34, 45/36, 45/54
U.S. Cl. 260—31.2 **5 Claims**

Novel solvent systems are provided consisting of an inorganic salt and a ketone or ester compound. Also provided are storage-stable polymer solutions prepared by utilizing such solvent system, and methods for preparing such solutions.

3,573,248
LACQUER MIXTURES
Josef Pedain, Cologne-Buccheim, Richard Müller, Bergisch-Neukirchen, Frank Wingler, Leverkusen, and Walter Krauss, Leverkusen-Steinbuchel, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed July 9, 1969, Ser. No. 840,463
Claims priority, application Germany, July 10, 1968, P 17 69 763.1
Int. Cl. C08g 22/00, 37/32
U.S. Cl. 260—31.7 **6 Claims**

Lacquer mixtures containing at least one hydroxyl free polyacrylate resin having carbonamide groups and a molecular weight above 600 and at least one poly-N-alkoxymethylurethane cross-linking agent.

3,573,249
POLYMERIZATION OF BUTADIENE
John F. Henderson and Jules Darcy, Sarnia, Ontario, Canada, assignors to Polymer Corporation Limited, Sarnia, Ontario, Canada
No Drawing. Filed June 29, 1967, Ser. No. 649,872
Claims priority, application Canada, July 9, 1966, 965,045
Int. Cl. C08f 1/34, 15/04, 45/28
U.S. Cl. 260—33.6 **5 Claims**

A mixture of butadiene-1,3 and a mono-alkenyl aromatic hydrocarbon such as styrene is polymerized in the absence of diluents or in the presence of butene-2 as the only diluent using a Ziegler type catalyst consisting of e.g. cobalt octoate and aluminum diethyl chloride.

A cis-1,4 polymer of butadiene substantially free of homopolymer of styrene is obtained in the form of a solution in the aromatic hydrocarbon. This solution is polymerized using a free radical initiator to produce an impact resistant thermoplastic composition.

3,573,250

FLUORINE-CONTAINING LINEAR POLYESTERS

Edward W. Pietrusza, Morristown, and Jack R. Pedersen, Parsippany, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 641,129, May 25, 1967. This application May 6, 1968, Ser. No. 727,016

Int. Cl. C08g *17/00, 39/00*

U.S. Cl. 260—40 14 Claims

This specification discloses aromatic polyesters prepared from a dicarboxylic acid reactant comprised of at least 20 mol percent of 4,4'-dichlorocarbonyldiphenylsulfone and an aromatic dihydroxy reactant containing a fluorine-substituted bisphenol. The polyesters have high melt and decomposition temperatures which make them particularly useful as high temperature coatings, films, and molded articles.

3,573,251

STABILIZED POLYURETHANE ELASTOMERS

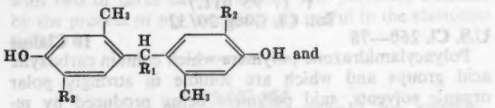
Ignazio Salvatore Megna, Somerville, and Frank Aloysius Vincent Sullivan, Westfield, N.J., assignors to American Cyanamid Company, Stamford, Conn.

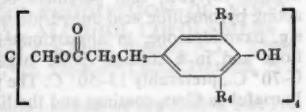
No Drawing. Filed Mar. 11, 1968, Ser. No. 711,841

Int. Cl. C08g *51/58*

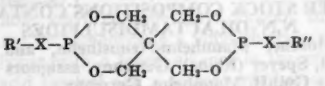
U.S. Cl. 260—45.8 5 Claims

Polyurethane elastomers are made resistant to discoloration on exposure to atmospheric fumes as well as ultraviolet radiation by the incorporation of a substituted phenol and an organic phosphite. Typical substituted phenols have the formulas:

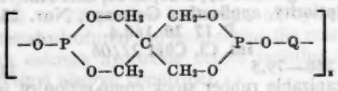




where R_1 is hydrogen or alkyl (C_1–C_8); R_2 is alkyl (C_4–C_8); and R_3 and R_4 are alkyl (C_1–C_8). Typical organic phosphites have the formulas:



and



where R' and R'' are alkyl (C_6–C_{18}); X is oxygen or sulfur; Q is a hydrogenated bisphenol A residue; and x is sufficient to provide a molecular weight of at least 1,000.

3,573,252

N-NITROSO-4,4'-BIS(2-PHENYLISOPROPYL)-DIPHENYLAMINE

Guy Bertrand, Choisy-le-Roi, and Jean-Marc Maison, Paris, France, assignors to Rhone-Poulenc SA., Paris, France

No Drawing. Filed Sept. 5, 1968, Ser. No. 757,757

Claims priority, application France, Sept. 20, 1967, 121,670

Int. Cl. S08f *45/60*

U.S. Cl. 260—45.9 4 Claims

N-nitroso-4,4'-bis(2-phenylisopropyl)diphenylamine, a new compound, is valuable as a vulcanisation retarder for elastomers. It has an anti-ageing effect on the vulcanised product.

3,573,253

PREPARATION OF CROSS-LINKED POLY (4-HYDROXY - 3 - NITRO) (NONSUBSTITUTED OR ALPHA AND/OR BETA SUBSTITUTED) STRYENE

Don N. Gray, Okemos, Mich.
(5503 Brixton Drive, Sylvania, Ohio 45360)

No Drawing. Filed Nov. 18, 1968, Ser. No. 776,807

Int. Cl. C07c *103/52*; C08f *7/10*; C08h *1/00*

U.S. Cl. 260—47 11 Claims

There is disclosed a process for preparing a solid phase, polymeric substrate comprising a cross-linked poly (4-hydroxy-3-nitro) styrene which is especially suitable for the synthesis of polypeptides. The polystyrene may be nonsubstituted or substituted (alpha and/or beta).

3,573,254

REDUCTIVE CAPPING OF POLY(PHENYLENE OXIDES)

Arnold Factor, Scotia, N.Y., assignor to General Electric Company

No Drawing. Filed Dec. 23, 1968, Ser. No. 786,475

Int. Cl. C08g *23/22*

U.S. Cl. 260—47 9 Claims

Poly(phenylene oxides) having improved optical clarity are prepared by treating a solution of the polymer with aluminum, cadmium, magnesium, tin or zinc, prior to or simultaneously with the capping reaction, whereby the hydroxyl groups of the polymer are converted to substituents which are substantially inert to oxygen attack at elevated temperatures. Still further improvement in clarity is obtained when a carboxylic acid soluble in the reaction mixture is used in conjunction with zinc and especially, when this treatment is carried out simultaneously with a hot-capping process, which generates and caps any incipient hydroxyl groups on the polymer chain.

3,573,255

CURABLE POLYMERIC COMPOSITIONS CONTAINING AS A CURING CATALYST N-SEC-ALKYL OR N-CYCLOALKYL ALKOXYAMINE

Henryk A. Cyba, Evanston, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Continuation-in-part of application Ser. No. 543,008, Apr. 18, 1966, now Patent No. 3,478,096, dated Nov. 11, 1969. This application May 28, 1969, Ser. No. 828,719

Int. Cl. C08g *30/14*

U.S. Cl. 260—47 12 Claims

A curable polymeric composition containing a curing catalyst comprising N-substituted alkoxyamine.

3,573,256

EPOXIDE SUBSTITUTED POLYTHIOUREA POLYAMINO COMPOUND AND COMPOSITION THEREOF WITH 1,2-POLYMERIC EPOXIDE

Shiro Kudo, Sakai-shi, and Shinichi Tsurugi, Koichi Nagaoka, and Jun Hayasaki, Tokyo-to, Japan, assignors to Kyowa Hakko Kogyo Kabushiki Kaisha, Tokyo-to, Japan

No Drawing. Continuation-in-part of application Ser. No. 616,493, Feb. 16, 1967, which is a continuation-in-part of application Ser. No. 441,866, Sept. 30, 1965. This application July 23, 1969, Ser. No. 844,177

Int. Cl. C08g *30/14*

U.S. Cl. 260—47 13 Claims

An epoxide resin is formed by reacting a 1,2 polymeric organic epoxide with the reaction product of ethylene oxide and polythiourea amine, said polythiourea amine having been formed by reacting monomeric polyamine with thiourea. The aforesaid 1,2 epoxide resin possesses solvent resistant and tenacious properties, and is utilizable in adhesives, coating materials, solvents, etc.

3,573,257

PROCESS FOR PRODUCTION OF POLYPHENYLENE OXIDES

Seizo Nakashio, Nishinomiya-shi, and Isamu Nakagawa, Osaka, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

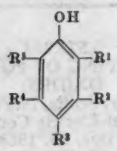
No Drawing. Continuation-in-part of application Ser. No. 711,918, Mar. 11, 1968. This application Dec. 29, 1969, Ser. No. 888,915

Claims priority, application Japan, Mar. 28, 1967, 42/19,740

Int. Cl. C08g *23/18*

U.S. Cl. 260—47 **13 Claims**

Polyphenylene oxide is produced by reacting oxygen with a phenol compound represented by the following formula:



wherein R^1, R^2, R^3, R^4 and R^5 independently represent hydrogen atoms, halogen atoms, hydrocarbon groups, substituted hydrocarbon groups, cyano groups, alkoxy groups, phenoxy groups, nitro groups or mono- or di-alkyl substituted amino groups, and at least one of the R^1, R^2, R^3, R^4 and R^5 is a hydrogen atom and further at least one thereof is other than a hydrogen atom, in the presence of (1) at least one compound selected from the group consisting of manganese compounds, cobalt compounds and copper compounds and (2) an alcoholate and/or phenolate of an alkali metal with or without an organic reaction medium in a state substantially free from water, and contacting the resulting reaction mixture with a poor solvent to the polyphenylene oxide, thereby to recover the desired polyphenylene oxide.

3,573,258

PROCESS FOR PRODUCING PIVALOLACTONE-TRIOXANE COPOLYMERS

Derek L. Ransley, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed Oct. 22, 1969, Ser. No. 868,642

Int. Cl. C08g *1/12, 3/00*

U.S. Cl. 260—64 **5 Claims**

Pivalolactone-trioxane copolymers and process for their manufacture by reacting the lactone with trioxane in a molar ratio of from 3:2 to 24:1 in the presence of a strong base.

3,573,259

PROCESS FOR THE PREPARATION OF ISOCYANURATE-CONTAINING POLYISOCYANATE SALTS

Perry A. Argabright, Brian L. Phillips, and Joe T. Kelly, Littleton, Colo., assignors to Marathon Oil Company, Findlay, Ohio

No Drawing. Filed Mar. 22, 1968, Ser. No. 715,199

Int. Cl. C08g *22/16;* **C07d** *55/00*

U.S. Cl. 260—77.5 **14 Claims**

Isocyanurate-containing polyisocyanate metal salts are prepared by reacting metal cyanate with organic diisocyanate in the presence of aprotic solvent at a temperature of from about 0 to 250° C.

3,573,260

PROCESS OF PREPARING SOLID MOLDING POWDER FROM POLYTRIMELLITATE AMIDE-IMIDES

Edwin F. Morello, Hammond, Ind., assignor to Standard Oil Company, Chicago, Ill.

No Drawing. Filed Aug. 26, 1968, Ser. No. 755,432

Int. Cl. C08g *20/32*

U.S. Cl. 260—78 **6 Claims**

A process for preparing solid molding powder and shaped articles from polytrimellitate amide-imides. The process comprises treating polyamide-imides prepared by reacting equimolar amounts of an aromatic primary diamine and an acyl halide derivative of trimellitic anhydride with a nitrogen or a sulfoxide containing organic polar solvent and water or organic diluent having a boiling point below that of the organic polar solvent, volatilizing the solvent diluent mixture and then heating the polytrimellitamide-imide to a temperature above the boiling point of the diluent but below the boiling point of the organic polar solvent to remove substantially all of the diluent and then heating the polymer at a temperature of about 170 to 280° C. to remove the residual solvent, but conducting the heating at a rate so that degradation is avoided at the surface of the polytrimellitamide-imide powder. Also a process for the fabrication of shaped articles from the molding powder which comprises applying a pressure of 200 to 25,000 p.s.i. to the molding powder which has been heated to a temperature with in the range of about 575 to 700° F. and subsequently ejecting the coalesced polyamide-imide in the form of a shaped particle.

3,573,261

POLYACYLAMIDRAZONE CARBOXYLIC ACID POLYMERS AND THEIR PRODUCTION

Hilde Kersten, Mechenhard, and Gerhard Meyer, Obernburg, Germany, assignors to Glanzstoff AG, Wuppertal, Germany

No Drawing. Filed July 22, 1969, Ser. No. 843,748

Claims priority, application Germany, July 27, 1968, P 17 95 011.7

Int. Cl. C08g *20/32*

U.S. Cl. 260—78 **10 Claims**

Polyacylamidrazone polymers which contain carboxylic acid groups and which are soluble in strongly polar organic solvents, said polymers being produced by reacting pyromellitic acid anhydride with an bisamidrazone, e.g. oxamidrazone, in approximately equimolar proportions and in a strongly polar organic solvent at about 0–70° C., preferably 15–50° C. The polymers are especially useful as films, coatings and the like.

3,573,262

RUBBER STOCK COMPOSITIONS CONTAINING N,N'-DILACTAMDISULFIDES

Klaus Morche, Mannheim-Neuostheim, and Helfried Ehrend, Speyer (Rhine), Germany, assignors to Rhein-Chemie GmbH, Mannheim, Germany

No Drawing. Filed Sept. 16, 1968, Ser. No. 760,098

Claims priority, application Germany, Nov. 23, 1967, P 17 20 160.4

Int. Cl. C08f *27/06*

U.S. Cl. 260—79.5 **11 Claims**

A vulcanizable rubber stock composition of improved storability is obtained by forming an intimate mixture including as essential constituents at least one diene-rubber and a sulfur donor including an effective amount of at least one N,N'-dilactamdisulfide, which mixture may be stored for prolonged periods of time at relatively high temperature without losing its vulcanization characteristics.

3,573,263

POLYMERIZATION WITH A REDOX AND AZOISOBUTYRONITRILE CATALYST

Edward Arthur Gill, 17 Peasehill Close, Rawdon, England

No Drawing. Filed July 3, 1967, Ser. No. 650,640

Claims priority, application Great Britain, July 6, 1966, 30,431/66

Int. Cl. C08f *1/62, 1/78, 3/44*

U.S. Cl. 260—79.3 **9 Claims**

A method of manufacturing water-soluble, very high molecular weight synthetic polymers, e.g. poly(acrylic acid), by polymerizing the monomer or monomers in

aqueous solution using a polymerization initiator comprising a redox system, for example potassium persulphate/sodium sulphite, and an azo compound free-radical source, for example azobisisobutyronitrile.

3,573,264

POLYMERIZATION OF CYCLIC ALKYLENE OXIDES WITH NITRILES AND ETHER USING BINARY CATALYST SYSTEM

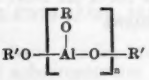
Hideo Tomomatsu, Austin, Tex., assignor to Jefferson Chemical Company, Inc., Houston, Tex.

No Drawing. Filed May 5, 1969, Ser. No. 821,982

Int. Cl. C08f *3/74, 15/22*

U.S. Cl. 260—85.5 **14 Claims**

High molecular weight polymers having a high degree of crystallinity are obtained from the polymerization of cyclic alkylene oxides with acrylonitrile, methacrylonitrile or a mixture of either acrylonitrile or methacrylonitrile with allyl glycidyl ether employing a binary catalyst system of an organometallic compound of the formula MZX_{y-1} and a polymeric aluminum alcoholate having the formula:



Cyclic alkylene oxides employed are those containing oxygen-carbon rings consisting of one oxygen atom in a ring with two or three carbon atoms. The polymers obtained by the process of my invention are useful in the elastomer field.

3,573,265

PROCESS FOR THE PRODUCTION OF VINYL CHLORIDE/VINYL ALCOHOL COPOLYMERS

Marvin Koral, 39 Round Top Road, Warren, N.J. 07060, and Elliott Farber, 16 Llanfair Lane, Trenton, N.J. 08618

No Drawing. Continuation-in-part of application Ser. No. 735,176, June 7, 1968. This application Dec. 27, 1968, Ser. No. 787,587

Int. Cl. C08f *27/14*

U.S. Cl. 260—87.1 **10 Claims**

Heat-stable vinyl chloride/vinyl alcohol copolymers are prepared by alcoholyzing a vinyl chloride/vinyl acetate copolymer with a lower alkanol in the presence of a strong acid catalyst and a solvent mixture comprising about 75 percent to 90 percent by weight of acetone and 10 percent to 25 percent by weight of cyclohexanone and/or tetrahydrofuran and neutralizing the reaction mixture with calcium hydroxide before isolating the vinyl chloride/vinyl alcohol copolymer.

3,573,266

POLYMERIZATION AND COPOLYMERIZATION OF OLEFINS AND RESULTING PRODUCTS

Jacques Stevens, Braine-l'Alleud, Belgium, assignor to Solvay et Cie, Societe Anonyme, Brussels, Belgium

No Drawing. Filed July 10, 1967, Ser. No. 651,973

Claims priority, application France, July 19, 1966, 69,897

Int. Cl. C08f *1/56, 3/06*

U.S. Cl. 260—88.2 **6 Claims**

Olefins are polymerized and copolymerized by being contacted with a catalyst of the following components: (a) a Group IV, V or VI metal or a hydride or an organometallic compound thereof; (b) an alkoxy halide of titanium, zirconium or vanadium and (c) a halide of a Group III or V element. There can thus be obtained polyolefins which are more linear and crystalline than those of the prior art.

3,573,267

POLYMERIC PRODUCTS AND PROCESSES

Joseph Green, 3 New Dover Drive, North Brunswick, N.J. 08902, and Joseph A. Castellano, 968 Shepard Ave., East Brunswick, N.J. 08816

No Drawing. Continuation-in-part of application Ser. No. 514,401, Dec. 16, 1965. This application July 24, 1968, Ser. No. 747,092

Int. Cl. C08f *3/22, 3/32, 15/06*

U.S. Cl. 260—92.1 **6 Claims**

Cured nitroso rubbers are provided by curing terpolymers of mixtures of three fluorinated monomers including 4-bromo-2,3,5,6-tetrafluoronitrosobenzene or 4-carboxy-2,3,5,6-tetrafluoronitrosobenzene.

3,573,268

METHOD FOR THE PREPARATION OF VINYL CHLORIDE BASED POLYMERS AT LOW TEMPERATURE

Marc E. Carrega, Chatenay-Malabry, France, assignor to Produits Chimiques Pechiney-Saint-Gobain, du Chateau, Neuilly-sur-Seine, France

No Drawing. Filed Mar. 24, 1969, Ser. No. 809,970

Claims priority, application France, Mar. 28, 1968, 145,879; Dec. 30, 1968, 181,937

Int. Cl. C08f *1/04, 1/56*

U.S. Cl. 260—92.8 **21 Claims**

The method for preparing vinyl chloride based polymers in which the monomers containing vinyl chloride are polymerized at low temperature in a catalytic system formulated of an (a) system containing a reducing compound of a metal in the sub-groups I–A to IV–A of the periodic classification; a compound of a transition metal selected from the sub-groups I–B to VII–B and VIII of the periodic classification, and a peroxygenated compound.

3,573,269

METHOD FOR MASS POLYMERIZING VINYL CHLORIDE BASED POLYMERS AT LOW TEMPERATURE

Marc E. Carrega, Chatenay-Malabry, France, assignor to Produits Chimiques Pechiney-Saint-Gobain, du Chateau, Neuilly-sur-Seine, Frane

No Drawing. Filed Apr. 22, 1969, Ser. No. 818,406

Claims priority, application France, Apr. 25, 1968, 149,435

Int. Cl. C08f *1/04, 1/56*

U.S. Cl. 260—92.8 **17 Claims**

A method for the preparation of polymers and copolymers based upon vinyl chloride embodying mass polymerization or copolymerization of vinyl chloride in the presence of a catalytic system formed of an (a) system prepared by reduction of a titanium compound in the presence of water or alcohol by an organo aluminum compound and the combination thereof with a peroxygenated compound such as a peroxide, hydroperoxide, perester or peracid.

3,573,270

POLYMERIZATION OF ALPHA-OLEFINS USING A DELTA $TiCl_3$ CATALYST

Quirino Trementozzi, Springfield, Mass., Douglas O. Geymer, Orinda, Calif., Thomas Boyd, Des Peres, Mo., and Heinz J. Dietrich, Bethany, Conn., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Division of application Ser. No. 566,490, July 20, 1966, which is a continuation-in-part of application Ser. No. 143,300, Oct. 6, 1961, which in turn is a continuation-in-part of application Ser. No. 850,013, Nov. 2, 1959. This application July 26, 1968, Ser. No. 765,721

Int. Cl. C08f *1/42, 3/10, 7/04*

U.S. Cl. 260—93.5 **11 Claims**

Disclosed herein is a process for polymerizing an alpha-olefin in the presence of a catalyst system comprising the

delta form of $TiCl_3$ and an organo metallic reducing agent.

3,573,271

PROCESS FOR RECOVERING PROTEIN FROM AQUEOUS YEAST LIQUORS

Milo A. Nielsen, St. Paul, Minn., assignor to Emery C. Swanson, Golden Valley, Minn.

No Drawing. Continuation of abandoned application Ser. No. 890,306, Dec. 10, 1968, which is a division of application Ser. No. 565,714, July 18, 1966. This application Apr. 9, 1970, Ser. No. 31,810

Int. Cl. A23j *1/18;* C07g *7/00*
U.S. Cl. 260—112 6 Claims

A process for molecular sieve fractionation of protein from brewers yeast or torula yeast liquors using a bed of modified dextran gel granules composed of cross-linked linear macromolecules in a three dimensional network of polysaccharide chains containing pores excluding penetration by said protein molecules.

3,573,272

CYCLAMMONIUM-5-AZO-PYRIMIDINE DYESTUFFS

Gunter Kaupp, Binningen, Basel-Land, and Hans Wegmuller and Jacques Voltz, Riehen, Switzerland, assignors to J. R. Geigy A.G., Basel, Switzerland

No Drawing. Filed May 20, 1968, Ser. No. 730,616

Claims priority, application Switzerland, June 14, 1967, 8,438/67

Int. Cl. C09b *29/36, 29/38, 62/24*
U.S. Cl. 260—146 12 Claims

A class of cyclammonium-5-azo-pyrimidine dyestuffs wherein two of the carbon atoms in the 2-, 4- and 6-position of the pyrimidine ring are occupied by an optionally substituted amino group and the remaining one by an etherified hydroxyl or mercapto group or an optionally substituted amino group and wherein the cyclammonium component is a mono- or polynuclear aromatic heterocyclic system which contains a quaternized nitrogen atom as ring member; such dyestuffs being distinguished by good affinity for acrylic fibers, polyester fibers and polyamide fibers modified to contain acid dyesites. The dyestuffs produce dyeings which have excellent fastness to perspiration, washing, light and decatising.

3,573,273

WATER-INSOLUBLE MONOAZO DYES CONTAINING 3-AMINO-2,1-BENZISOTHIAZOLE COUPLED TO AN N,N-DISUBSTITUTED ANILINE

Matthias Seedfelder, Ludwigshafen (Rhine), Erwin Hahn, Viernheim, Hessen, and Hans Guenter Wippel, Ludwigshafen (Rhine), Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Rhineland-Pfalz, Germany

No Drawing. Filed May 23, 1968, Ser. No. 731,621

Claims priority, application Germany, June 3, 1967, P 16 44 061.2

Int. Cl. C09b *29/38;* D06p *1/06, 1/08*
U.S. Cl. 260—158 4 Claims

Monoazo dyes of a 3-amino-2,1-benzisothiazole coupled to an N,N-disubstituted-aniline derivative, said dyes being especially useful for dyeing synthetic textile material of fiber-forming polyesters and polyamides and exhibiting good fastness properties.

3,573,274

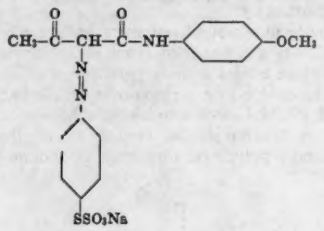
AZO DYE FROM COUPLING DIAZOTIZED SODIUM S-4 - AMINOPHENYLTHIOSULFATE AND ACETOACET-p-ANISIDIDE

Frederick E. Barwick III, 115 Sedgwick Terrace, Charlotte, N.C. 28214

No Drawing. Filed Aug. 13, 1968, Ser. No. 752,171

Int. Cl. C07c *107/04;* C09b *29/32*
U.S. Cl. 260—193 1 Claim

An azo dye of the formula



and method for making same by coupling equimolar amounts of diazotized sodium S-4-aminophenylthiosulfate and acetoacet-p-anisidide.

3,573,275

ISOLATION AND PURIFICATION OF COUMERMYCIN ANTIBIOTICS

Hubert Maehr, Belleville, James Parnell Scannell, Bloomfield, and Vernon Zeitz, Passaic, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Continuation-in-part of application Ser. No. 712,370, Mar. 12, 1968. This application Feb. 20, 1969, Ser. No. 801,168

Int. Cl. C07c *47/18*
U.S. Cl. 260—210 10 Claims

A crude antibiotic complex known as the "coumermycin complex" is extracted from the fermentation broth or cells with a water miscible organic solvent in a basic or slightly acidic medium. Thereafter, the crude complex is isolated by acidification and filtration.

3,573,276

ALKYLSULPHONYL-COBALAMINES

Otto Wagner, Wuppertal-Elberfeld, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Oct. 10, 1968, Ser. No. 766,633

Claims priority, application Germany, Oct. 14, 1967, F 53,777

Int. Cl. C07d *55/62*
U.S. Cl. 260—211.7 9 Claims

Alkylsulphonyl-cobalamines are produced by reacting hydroxo-cobalamine with alkyl-sulphinic acids at ambient temperature or at slightly elevated temperatures. They may also be prepared by reacting cyano-cobalamines with alkyl-sulphinic acids. The alkylsulphonyl-cobalamines are useful in the same manner as vitamin B_{12} and may be administered in the same general dosage ranges and by the same general routes of administration.

3,573,277

CELLULOSIC ION EXCHANGE MATERIALS AND METHOD OF MAKING

Roy Arthur Grant, Great Shelford, Cambridge, England, assignor to Tasman Vaccine Laboratory Limited, Upper Hutt, North Island, New Zealand

No Drawing. Filed July 8, 1969, Ser. No. 840,044
Claims priority, application New Zealand, July 15, 1968, 153,128
Int. Cl. C08b *15/00, 15/06*
U.S. Cl. 260—231 15 Claims

Ion exchange materials are described which are suitable for separating materials such as proteins and for purifying aqueous effluents. These exchange materials are prepared from regenerated cellulose by cross-linking and introduction of exchange groups to give cationic or anionic exchangers.

3,573,278

AZIRIDINYL SUBSTITUTED UNSATURATED LONG CHAIN ACYCLIC HYDROCARBONS

Heinz Uelzmann, Cuyahoga Falls, Ohio, assignor to The General Tire & Rubber Company

No Drawing. Filed Nov. 15, 1967, Ser. No. 683,137
Int. Cl. C07d *23/02, 23/06*
U.S. Cl. 260—239 5 Claims

Unsaturated, long chain, acyclic hydrocarbons having one or two aziridinyl substituents are prepared by reaction of an alkylenimine and a long chain alkatriene in the presence of an alkali metal or equivalent catalyst. The resulting aziridinyl products, e.g., the ethylenimine adduct of allo-ocimene, contain at least three reactive groups, i.e., a combination of two aziridinyl groups and one olefinic unsaturation or one aziridinyl group and two olefinic unsaturations.

3,573,279

1-SUBSTITUTED CYCLOALKYL PENICILLINS

Harvey E. Alburn, West Chester, and William Dvonch, Radnor, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed Jan. 25, 1967, Ser. No. 611,555
Int. Cl. C07d *99/16*
U.S. Cl. 260—239.1 17 Claims

The compounds are certain 1-substituted cycloalkyl penicillins having antibiotic activity, and also intermediates which are useful for preparing mixed anhydride compounds suitable for reacting with 6-aminopenicillanic acid for producing said penicillins.

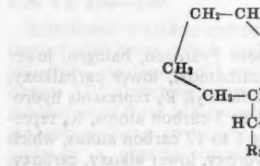
3,573,280

DERIVATIVES OF ε-CAPROLACTAM

Herbert K. Reimschuessel, Morristown, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

Original application Jan. 29, 1964, Ser. No. 341,068, now Patent No. 3,384,625, dated May 21, 1968. Divided and this application Apr. 24, 1967, Ser. No. 645,085
Int. Cl. C07d *41/06*
U.S. Cl. 260—239.3 9 Claims

This invention relates to derivatives of caprolactam having the formula:



wherein R_1 is a meta-directing electrophilic radical selected from the group consisting of cyano, carboxy and carbamyl, and R_2 is a meta-directing electrophilic radical selected from the group consisting of hydrogen, cyano, carboxy, lower alkoxycarbonyl and carbamyl, and their preparation. These compounds are useful as intermediates in the preparation of polyamides.

3,573,281

2,10 - DIOXA - 5 - AZA-TRICYCLO[6,2,1,0^{1,5}] UNDECANEDION-(6,9) AND 2,11-DIOXA-6-AZA - TRICYCLO[7,2,1,0^{1,6}]DODECANEDION-(7,10) COMPOUNDS AND THEIR PREPARATION

Rudolf Nehring, Marl, Germany, assignor to Chemische Werke Huls Aktiengesellschaft, Marl, Germany

No Drawing. Filed Sept. 20, 1968, Ser. No. 761,334
Claims priority, application Germany, Oct. 2, 1967, C 43,476
Int. Cl. C07d *85/78, 87/20, 87/54*
U.S. Cl. 260—239.3 5 Claims

Substituted Δ^2-oxazolines and 4H-5,6-dihydro-1,3-oxazines are converted into lactones containing amide groups by reacting with maleic acid anhydride, under exclusion of moisture and at a temperature of 0–180° C., from 0.2 to 1.0 mole of the maleic acid anhydride being employed per mol of the oxazoline or oxazine. The lactone products are utilizable as inhibitors of plant growth; also, as synthetic components of drugs.

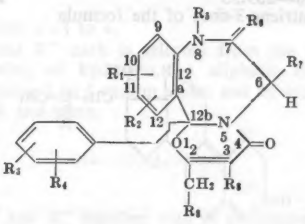
3,573,282

4H-[1,3]OXAZINO[3,2-d][1,4]BENZODIAZEPINE-4,7(6H)-DIONES

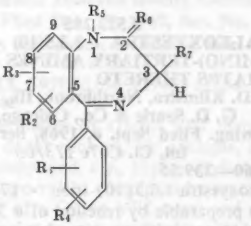
Jacob Szmuszkovicz, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Continuation-in-part of application Ser. No. 760,963, Sept. 19, 1968. This application Mar. 27, 1969, Ser. No. 811,224
Int. Cl. C07d *53/06, 87/20, 87/54*
U.S. Cl. 260—239.3 25 Claims

Oxazinobenzodiazepines of the Formula II:



wherein R_1, R_2, R_3 and R_4 are hydrogen, lower-alkyl, lower-alkoxy, halogen, $—CF_3$, $—NO_2$ or —CN, wherein R_5 is hydrogen, lower-alkyl or benzyl, wherein R_6 is oxygen or sulfur, wherein R_7 is hydrogen, lower-alkyl or lower-alkoxy, and wherein R_8 is hydrogen, lower-alkyl or phenyl, are prepared by reacting 5-phenyl-3H-1,4-benzodiazepin-2(1H)-ones of Formula I:



wherein R_1, R_2, R_3, R_4, R_5, R_6 and R_7 are defined as above, with an acyl halide in the presence of a base or with a diketene. The new products are essentially sedatives and tranquilizers useful for treatment of mammals.

3,573,283
PROCESS FOR PREPARING N-VINYL-3-ALKYL-LACTAMS

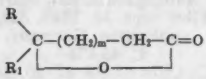
Ashot Merijan, Wayne, and Frederick Grosser, Midland Park, N.J., assignors to GAF Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 508,828, Nov. 19, 1965. This application Apr. 30, 1969, Ser. No. 820,616

Int. Cl. C07d *41/06*

U.S. Cl. 260—239.3 7 Claims

A process for preparing N-vinyl-3-alkyl lactams comprising heating a lactone having the formula:



wherein R and R_1 are selected from the group consisting of hydrogen, methyl and ethyl and *m* is an integer of from 1 to 3 in the presence of an α-olefin and a tertiary alkyl organic peroxide so as to alkylate same in the 3 position, heating the alkylated lactone with anhydrous ammonia under pressure and subsequently forming the salt of the resulting lactam and vinylating said lactam.

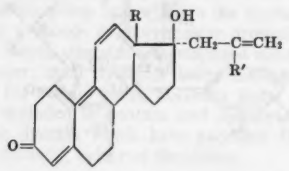
3,573,284
NOVEL $\Delta^{4,9,11}$-GONATRIENES

Georges Muller, Nogent-sur-Marne, and Andre Pierdet, Noisy-le-Sec, France, assignors to Roussel-UCLAF, Paris, France

No Drawing. Filed Sept. 4, 1968, Ser. No. 757,508
Claims priority, application France, Sept. 8, 1967, 120,419
The portion of the term of the patent subsequent to June 20, 1983, has been disclaimed
Int. Cl. C07c *173/00*

U.S. Cl. 260—239.55 14 Claims

$\Delta^{4,9,11}$-gontriene-3-ones of the formula



(I)

wherein R is alkyl of 1 to 4 carbon atoms and R′ is selected from the group consisting of hydrogen and methyl with the proviso that R is other than methyl when R′ is hydrogen which have a strong progestomimetic activity and process for their preparation and intermediates formed therein.

3,573,285
N-(3 - ALKOXYESTRA - 1,3,5(10) - TRIEN-17β-YLAMINO)-TERTIARY AMINES AND INTERMEDIATES THERETO

Paul D. Klimstra, Northbrook, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

No Drawing. Filed Sept. 6, 1968, Ser. No. 758,106
Int. Cl. C07c *173/00*

U.S. Cl. 260—239.55 9 Claims

N-(3-alkoxyestra-1,3,5(10)-trien - 17β-ylamino)-tertiary amines preparable by reaction of a 3-alkoxyestra-1,3,5(10)-trien-17-one with an N-amino-tertiary amine followed by reduction of the resulting imine are useful in view of their valuable pharmacological properties, i.e. estrogenic and anti-microbial, e.g. anti-protozoal, anti-algal and anti-fungal.

3,573,286
PYRIDOXAL DERIVATIVES AND PRODUCTION THEREOF

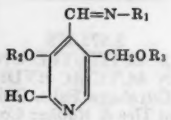
Hisanao Zenno, Nishinomiya, Akira Sugihara, Osaka, and Sinji Tsubouchi, Kyoto, Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

No Drawing. Filed June 14, 1967, Ser. No. 645,902
Claims priority, application Japan, June 29, 1966, 41/42,614; July 2, 1966, 41/43,089; July 8, 1966, 41/44,555; July 11, 1966, 41/45,544; July 26, 1966, 41/49,195; Sept. 30, 1966, 41/64,528; Oct. 3, 1966, 41/65,052

Int. Cl. C07d *31/30*

U.S. Cl. 260—240 7 Claims

This disclosure teaches novel pyridoxylideneamine derivatives representable by the following formula:



wherein R_1 is alkyl substituted or unsubstituted with carboxy, lower alkoxy, lower alkylthio, lower alkoxycarbonyl, aryl, carbamoyl or 5- or 6-membered heterocyclyl containing one or two hetero atom(s) selected from the group consisting of N, O and S, or aryl substituted or unsubstituted with carboxy, lower alkyl, lower alkoxy, lower alkylthio, lower alkoxycarbonyl, carbamoyl or halogen; R_2 is acyl; R_3 is hydrogen, acyl or phosphono, their intermediates and process for preparing the same. The pyridoxylideneamine derivatives and their intermediates are useful compounds having Vitamin B_6 activity.

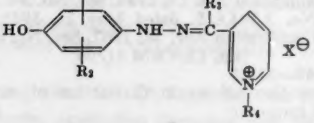
3,573,287
SUBSTITUTED p-HYDROXYPHENYL-HYDRAZONES AND PROCESS FOR THEIR MANUFACTURE

Manfred Schorr, Frankfurt am Main, Elmar Schrinner, Wiesbaden, and Karl Horst Teichmann, Hochheim (Main), Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Aug. 7, 1968, Ser. No. 750,748
Claims priority, application Germany, Aug. 16, 1967, P 16 70 904.9
Int. Cl. C07d *31/42*

U.S. Cl. 260—240 4 Claims

Substituted p - hydroxyphenyl - hydrazones of the formula



in which R_1 and R_2 represent hydrogen, halogen, lower alkyl or alkoxy, carboxy, carbamoyl, lower carbalkoxy, carbobenzoxy, sulfoxy or sulfamoyl; R_3 represents hydrogen or lower alkyl having 1 to 3 carbon atoms, R_4 represents an alkyl radical having 1 to 12 carbon atoms, which may carry one or several hydroxy, lower alkoxy, carboxy, lower carbalkoxy, carbamoyl, nitrile, sulfo, lower sulfalkoxy and/or sulfamoyl groups, and X represents the anion of a non-toxic acid, which compounds have bacteriostatic properties.

3,573,288

PIPERAZINYLIMINOMETHYLPYRIDINIUM COMPOUNDS

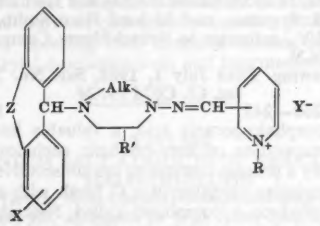
John W. Cusic, Skokie, Ill. 60076, and Peter Yonan, Morton Grove, Ill. 60053

No Drawing. Filed Apr. 1, 1968, Ser. No. 717,955

Int. Cl. C07d *31/42*

U.S. Cl. 260—240 5 Claims

Pyridinium compounds of the formula



wherein Alk is ethylene, propylene, or trimethylene; R is lower alkyl; R′ is hydrogen or methyl; X is hydrogen, methyl, or halogen; Y is halogen; and Z is ethylene, vinylene, or trimethylene are described herein. The compounds involved possess anti-arrhythmic activity. They are also anti-bacterial, anti-protozoal, and anti-algal agents. The compounds are prepared by the quaternization of the appropriate pyridyl compound or by the reaction of the appropriate N-aminopiperazine with a formyl-1-alkylpyridinium salt.

3,573,289

CATIONIC METHINE COMPOUNDS

James M. Straley and John G. Fisher, Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Oct. 27, 1967, Ser. No. 678,514

Int. Cl. C09b *23/00*

U.S. Cl. 260—240 8 Claims

Methine compounds prepared by condensing a 5-formylthiazole with a 2-methyleneindoline are useful as dyes for acrylic, modacrylic and acid-modified polyester textile materials.

3,573,290

SUBSTITUTED CINNAMIC ACIDS

Alfred Sallmann, Bottmingen, Basel-Land, and Rudolf Pfister, Basel, Switzerland, assignors to Geigy Chemical Corporation, Ardsley, N.Y.

No Drawing. Filed Oct. 4, 1967, Ser. No. 672,707

Claims priority, application Switzerland, Oct. 7, 1966, 14,523/66

Int. Cl. C07c *101/46*

U.S. Cl. 260—240 6 Claims

Substituted o-anilino-cinnamic acids and addition salts thereof with bases, which compounds exhibit useful anti-phlogistic, analgesic and antipyretic activity, and also possess UV absorbing properties, and processes for the production of these compounds; therapeutic as well as sun tan compositions containing these substituted cinnamic acids or a pharmaceutically acceptable addition salt thereof with a base and methods of treatment, particularly methods of inducing antiphlogistic, analgesic and antipyretic effects in mammals. An illustrative embodiment is o-(2,6-dichloroanilino)-cinnamic acid.

3,573,291

CINNAMYLPIPERAZINE PREPARATIONS

Claude E. Fauran, Paris, Gerhard H. Huguet, Malesherbes, Bernard B. P. Pourrias, Meudon-la-Foret, and Michel Turin and Guy G. R. Raynaud, Paris, France, assignors to Delalande S.A. Courbevoie, Hauts-de-Seine, Paris, France

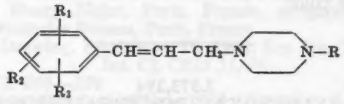
No Drawing. Filed Aug. 16, 1967, Ser. No. 660,902

Claims priority, application France, Aug. 18, 1966, 36,963

Int. Cl. C07d *51/70*

U.S. Cl. 260—240 4 Claims

Cinnamylpiperazines useful as pharmaceuticals particularly for treatment of coronary insufficiency, of the formula:



and montoxic salts thereof,

wherein R_1, R_2 and R_3 each is selected from the group consisting hydrogen, halogen, an alkyl group containing 1 to 4 carbon atoms, a hydroxyl group, an alkoxy group, an amino group and a nitro group,

R is selected from the group consisting of

$$-(CH_2)_n-CH(OH)CH_3$$

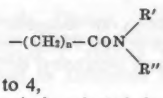
$$-(CH_2)_n-C(R')(R'')OH$$

wherein at least one of R′ and R″ is an aromatic radical

$$-CH_2)_n-COOR'$$

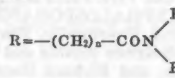
$$-(CH_2)_n-CO-R'$$

$$-CH_2)_n-CH(OH)CH_2OH$$



wherein $n=1$ to 4,

R′ and R″ each is selected from the group consisting of hydrogen, an aliphatic radical containing 1 to 4 carbon atoms and an aromatic radical, and when



R′ and R″ together with N constitutes a heterocyclic radical.

3,573,292

NOVEL OXYGEN COMPLEXES AND PROCESS FOR THE PRODUCTION THEREOF

Gunther Wilke, Paul Heimbach, and Herbert Schott, Mulheim (Ruhr), Germany, assignors to Studiengesellschaft Kohle mbH., Mulheim (Ruhr), Germany

No Drawing. Filed Dec. 15, 1967, Ser. No. 690,764

Claims priority, application Germany, Dec. 17, 1966, St 26,261

Int. Cl. C07f *15/00, 15/02, 15/04*

U.S. Cl. 260—242 17 Claims

Zero-valent complexes of Group VIII metals, oxygen and an electron donor such as, for example, a Group V metal trivalent compound, e.g., triphenyl phosphine; production of such zero-valent complexes by reacting a zero-valent compound of a Group VIII metal and an electron donor with molecular oxygen, preferably at a temperature of about —100 to about 75° C. These complexes can be used as oxygen transfer agents and for the preparation of finely divided, highly active metals of Sub-group VIII of the Periodic Table.

3,573,293

PHOSPHORODITHIOIC ACID ESTERS, THEIR SALTS AND THEIR PREPARATION

Herbert F. Wiese, Cleveland, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

No Drawing. Division of application Ser. No. 498,107, Oct. 19, 1965, now Patent No. 3,361,668, dated Jan. 2, 1968. Continuation of application Ser. No. 598,957, Dec. 5, 1966. This application Mar. 4, 1969, Ser. No. 806,022

Int. Cl. C07f *9/16*

U.S. Cl. 260—242 15 Claims

A process for preparing improved phosphorodithioic acid esters comprises incorporating up to about 5% by weight of an amine in a phosphorodithioic acid ester. The esters prepared by the process are less corrosive and lighter in color.

3,573,294

7 - (ARYLGLYOXAMIDO)CEPHALOSPORANIC ACIDS AND THEIR SALTS AND α-CARBONYL DERIVATIVES

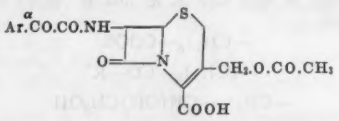
Alan Gibson Long, Greenford, Edward McKenzie Wilson, Hayes, and William Graham, Pinner, England, assignors to Glaxo Laboratories Limited, Greenford, England

No Drawing. Filed Mar. 14, 1968, Ser. No. 712,962

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 11 Claims

The invention relates to antibiotics which are compounds of the formula



in which Ar represents an aromatic group having an atomic weight sum of at least 78 and their pharmaceutically acceptable salts and α-carbonyl derivatives.

3,573,295

PROCESS FOR THE PREPARATION OF 7-AMINOCEPHALOSPORANIC ACID

David Aaron Johnson, Fayetteville, Elwin J. Richardson, Kirkville, John McKenna Roubie and Herbert Horatius Silvestri, Syracuse, and Richard Root Smith, Fayetteville, N.Y., assignors to Bristol-Myers Company, New York, N.Y.

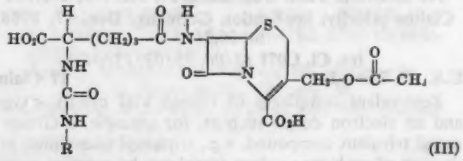
No Drawing. Filed July 1, 1968, Ser. No. 741,301

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 9 Claims

7-aminocephalosporanic acid, a valuable intermediate for the preparation of semi-synthetic cephalosporins, is prepared by a process comprising the consecutive steps of:

(A) acylating cephalosporin C broth with an isocyanate to produce a compound called N-(N'-alkyl- or arylcarbamoyl)cephalosporin C and having the formula



(III)

in which R is (lower)alkyl or aryl;

(B) recovering derivative III by solvent extraction;

(C) silylating the carboxyl functions of compound III to form silyl esters;

(D) halogenating the silyl ester of compound III to produce an imino-halide;

(E) forming an imino-ether from the imino-halide by treatment with an alcohol; and

(F) mixing said imino-ether with water or an alcohol to produce 7-aminocephalosporanic acid (7-ACA).

3,573,296

PROCESS FOR THE PREPARATION OF 7-AMINOCEPHALOSPORANIC ACID

David Aaron Johnson, Fayetteville, Elwin J. Richardson, Kirkville, John McKenna Roubie and Herbert Horatius Silvestri, Syracuse, and Richard Root Smith, Fayetteville, N.Y., assignors to Bristol-Myers Company, New York, N.Y.

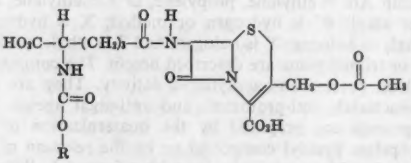
No Drawing. Filed July 1, 1968, Ser. No. 741,351

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 11 Claims

7-aminocephalosporanic acid, a valuable intermediate for the preparation of semi-synthetic cephalosporins, is prepared by a process comprising the consecutive steps of:

(A) Acylating cephalosporin C broth with a haloformate to produce a compound called N-(carb-alkyl or aryloxy)cephalosporin C having the formula



(III)

in which R is (lower)alkyl or aryl;

(B) Recovering derivative III by solvent extraction;

(C) Silylating the carboxyl functions of compound III to form silyl esters;

(D) Halogenating the silyl ester of compound III to produce an imino-halide;

(E) Forming an imino-ether from the imino-halide by treatment with an alcohol; and

(F) Mixing said imino-ether with water or an alcohol to produce 7-aminocephalosporanic acid (7-ACA).

3,573,297

METHOD FOR PRODUCING PURE METHDILAZINE SULFOXIDE

Paul Merrill Lish, John H. Weikel, and Stanley J. Dykstra, Evansville, Ind., assignors to Mead Johnson & Company

No Drawing. Original application Nov. 8, 1965, Ser. No. 506,872, now Patent No. 3,435,114, dated Mar. 25, 1969. Divided and this application July 2, 1968, Ser. No. 765,717

Int. Cl. C07d *93/14*

U.S. Cl. 260—243 4 Claims

Process for preparing methdilazine sulfoxide in pure crystalline form.

3,573,298

N-HYDROXYETHYLAMINO- AND N-MORPHOLINO-DITHIOCARBOXYLATED CEPHALOSPORINS

Earle M. Van Heyningen, Indianapolis, Ind., and Carter W. Brown, Columbus, Ohio, assignors to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Original application Jan. 18, 1965, Ser. No. 426,391. Divided and this application Nov. 18, 1968, Ser. No. 776,792

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 3 Claims

α-Thienylmethyl N - methyl - N - B - hydroxyethyldithiocarbamate, α-thienylmethyl N,N - bis(B-hydroxyethyl)dithiocarbamate, and α-thienylmethyl morpholinodithiocarboxylate cephalosporins useful as antibiotics.

3,573,299

DERIVATIVES OF 2,6-DODECADIENOIC ACID

David Andrews, Nutley, Walter Kimel, Highland Park, and Ronald Propper, Fair Lawn, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Original application Dec. 18, 1967, Ser. No. 691,246, now Patent No. 3,513,176, dated May 19, 1970. Divided and this application Sept. 26, 1969, Ser. No. 861,503

Int. Cl. C07d *1/12*

U.S. Cl. 260—247.7 2 Claims

This invention is directed to a process for producing 3-ethyl - 10,11 - epoxy-2,6-dodecadienoic acid derivatives which are useful in killing and preventing proliferation of insects by upsetting their hormone balance from 3,7-dilower alkyl-1,6-octadien-3-ols and intermediates therein.

3,573,300

ONIUM SALT ADDUCTS OF REACTIVE HALO-TRIAZINES

Floyd J. Green, West Chester, Ohio, and Philip P. Goland, Chicago, Ill., assignors to Will Ross, Inc., Milwaukee, Wis.

No Drawing. Continuation-in-part of application Ser. No. 714,325, Mar. 19, 1968. This application Feb. 14, 1969, Ser. No. 799,514

Int. Cl. C07d *55/48*

U.S. Cl. 260—248 5 Claims

Novel onium salt adducts are prepared by reacting a cyclic nitrogen compound containing one or more reactive halogen substituents (e.g., cyanuric chloride) with a cyclic compound containing a carbonyl or thione group conjugated with nitrogen or oxygen, e.g., 2(1-H)-pyridone. The resultant products possess desirable cross-linking and polymerizing properties.

3,573,301

TRIAZINE COMPOUNDS AND PROCESS FOR THE PREPARATION

Roland A. E. Winter, Armonk, N.Y., assignor to Geigy Chemical Corporation, Ardsley, N.Y.

No Drawing. Filed Oct. 30, 1968, Ser. No. 772,033

Int. Cl. C07d *55/32*

U.S. Cl. 260—249.6 8 Claims

Alkanolamino substituted-s-triazines are prepared by a process comprising reacting cyanuric chloride with an alkanolamine in the presence of an alkali or alkali earth meta oxide, hydroxide, carbonate or a bicarbonate in an organic medium substantially free of water. By this process novel 2,4,6-tris(N-alkyl alkanolamino)-s-triazine compounds are also prepared. These compounds are useful as cross-linking agents for polyesters or alkyds.

3,573,302

4,6-BIS-(ALKYNYLAMINO)-s-TRIAZINES

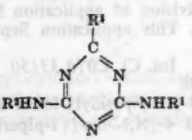
Albrecht Zschocke, Bad Durkheim, Karl-Heinz Koenig, Ludwigshafen, and Adolf Fischer, Mutterstadt, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Dec. 2, 1968, Ser. No. 780,562

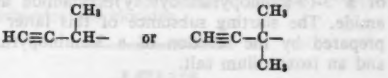
Int. Cl. C07d *55/46, 55/20*

U.S. Cl. 260—249.8 3 Claims

New and valuable triazine derivatives and a method of controlling the growth of unwanted plant with these compounds, said triazine derivatives having the formula



in which R^1 denotes an aliphatic or alkoxyalkyl radical having not more than four carbon atoms, R^2 denotes the group



and R^3 denotes chlorine or the methoxy or methylmercapto radical or the radical —CN.

3,573,303

GUANIDINE DERIVATIVES AND THEIR PREPARATION

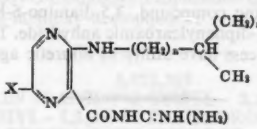
Don Pierre Rene Lucien Giudicelli, Fontenay-sous-Bois, and Henry Najer, Paris, France, assignors to Les Laboratories Dausse, Paris, France

No Drawing. Filed Sept. 18, 1968, Ser. No. 760,670

Int. Cl. C07d *51/76*

U.S. Cl. 260—250 2 Claims

The pyrazinoyl-guanidines of the formula:



in which X is halogen or trifluoromethyl, *m* is 1 to 4 and *n* is 0 to 3 and their salts are useful as salidiuretics.

3,573,304

1-DIMETHYLAMINO - 3 - METHYL-2(PYRIDYL OR PYRIDAZINYL)PENTANE AND THE CORRESPONDING NON-TOXIC ACID ADDITION SALTS THEREOF

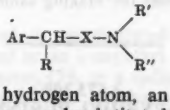
Jeannine A. Eberle, Chatou, Yvelines, Micheline Y. Sergant, Clamart (Hauts-de-Seine), Claude P. Fauran, Paris, and Gerard J. Huguet, Malesherbes, Loiret, France, assignors to Delalande S.A., Hauts-de-Seine, France

No Drawing. Continuation-in-part of application Ser. No. 686,722, Nov. 29, 1967. This application Dec. 3, 1968, Ser. No. 780,914

Int. Cl. C07d *51/04, 31/42*

U.S. Cl. 260—250 3 Claims

A compound having utility as a cardiovascular agent, a diuretic agent or a spasmolytic agent and having the formula:



in which Ar is a hydrogen atom, an aromatic radical which may be mono or polysubstituted by groups of low molecular weight or a heterocyclic radical, R is a saturated or unsaturated linear or branched-chain radical having one to five carbon atoms and which may contain a functional group, R′ and R″ each is a hydrogen atom, an aliphatic radical having one to three carbon atoms or R′ and R″ plus the nitrogen form a heterocyclic radical, X is a carbonyl radical or a methylene radical and Ar also including a cyclic saturated radical when X is a methylene radical.

3,573,305

(3-AMINO-PYRAZINOYL)SULFAMIDES AND THEIR PREPARATION

Edward J. Cragoe, Jr., and John B. Bicking, Lansdale, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Dec. 30, 1968, Ser. No. 788,097

Int. Cl. C07d *51/76*

U.S. Cl. 260—250 10 Claims

(3-aminopyrazinoyl)sulfamides that exhibit saluretic and diuretic properties are described. The products are

prepared by the reaction of a 4H-pyrazino[2,3-d][1,3] oxazin-4-one and a sulfamide in the presence of a tertiary amine followed by hydrolysis or by the reaction of a 3-(3-aminopyrazinoyloxy)acrylamide and a sulfamide. The starting substance of this latter reaction is prepared by the reaction of a 3-aminopyrazinoic acid and an isoxazolium salt.

3,573,306

PROCESS FOR PREPARATION OF N-SUBSTITUTED 3,5-DIAMINO-6-HALOPYRAZINAMIDES

Kenneth L. Shepard, Ambler, and Edward J. Cragoe, Jr., Lansdale, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Mar. 5, 1969, Ser. No. 804,663
Int. Cl. C07d *51/76*
U.S. Cl. 260—250 **17 Claims**

A new process is described for the preparation of N-substituted-3,5-diamino-6-halopyrazinamides which comprises treating an amino compound with a novel, very reactive acylating compound, 3,5-diamino-6-halopyrazincarboxylic N,N-diphenylcarbamic anhydride. The products of the new process have utility as diluretic agents.

3,573,307

WITHDRAWN

3,573,308

3-LOWER ALKOXY METHYL-3,4-DIHYDRO-4-HYDROXY-4-ARYL QUINAZOLIN-2(1H) ONES AND RELATED COMPOUNDS

Robert Ye-Fong Ning, Verona, and Leo Henryk Sternbach, Upper Montclair, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed Apr. 3, 1969, Ser. No. 813,304
Int. Cl. C07d *51/48*
U.S. Cl. 260—251 **15 Claims**

3-lower alkoxy methyl - 3,4 - dihydro - 4 - hydroxy-4-aryl quinazolin-2(1H)ones and derivatives are prepared by reacting 5,9B-dihydro-9B-phenyloxazirino-[2,3d][1,4]-benzodiazepin-4(3H)ones with alcohols or via the reaction of an aryl-phenyl ketone with methyl isocyanates. The quinazolin - 2 - ones are trichomonacides. The invention relates to such quinazolin - 2 - ones, derivatives thereof and processes for making same.

3,573,309

8-PYRIDYL PURINES

Felix Gotthilf Bergmann, Jerusalem, Mordechai Abraham Kleiner, Petah-Tikva, and Moshe Rashi, Jerusalem, Israel, assignors to Yissum Research Development Company, Jerusalem, Israel

No Drawing. Filed July 30, 1968, Ser. No. 748,620
Claims priority, application Israel, Aug. 4, 1967, 28,456
Int. Cl. C07d *57/62*
U.S. Cl. 260—252 **14 Claims**

8-pyridyl purines can be synthesized by condensation of 4,5-diaminopyrimidines with amidinopyridines. Protonation of the pyridine nitrogen causes a marked bathochromic shift of λ_{max} in the 2- and 4-pyridyl derivatives, but not in the 3-pyridyl isomers. A similar effect is produced by quaternisation of the 4-, but not of the 3-pyridyl substituent. The 8-(N-methylpyridinium) group also facilitates greatly anion formation in the purine ring.

The new compounds showed a variety of biological activities, such as prolonged hypotension when injected into cats which were anesthetized with nembutal.

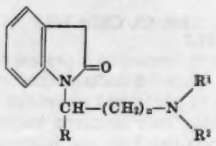
3,573,310

1-SUBSTITUTED DERIVATIVES OF 2-INDOLINONE

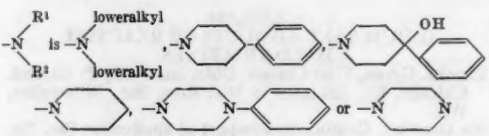
John William Van Dyke, Jr., Elkhart, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

No Drawing. Filed Sept. 28, 1967, Ser. No. 671,242
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 **7 Claims**

1-substituted derivatives of 2-indolinone of the formula:



in which R is H or a lower alkyl of from 1 to 5 carbon atoms, and



and pharmacologically acceptable salts thereof. These compounds are useful as analgetic agents.

3,573,311

METHOD OF PRODUCING N-AMINOETHYL-PIPERAZINE

Leonard L. Valka, Angleton, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Sept. 25, 1968, Ser. No. 762,533
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 **7 Claims**

A method of producing N-aminoethylpiperazine which comprises reacting diethylenetriamine (D.E.T.A.) and ethylene dichloride (E.D.C.) in the critical molar ratios (D.E.T.A./E.D.C.) of 4/1 to 20/1, said reaction resulting in the production of little or none of the heretofore expected high molecular weight linear condensation products.

3,573,312

PIPERAZINE DERIVATIVES OF ADAMANTANE-1,3-DICARBOXYLIC ACID

Carl Peter Krimmel, Wauconda, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

No Drawing. Filed Oct. 9, 1968, Ser. No. 766,305
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 **6 Claims**

Amides of adamantane-1,3-dicarboxylic acid and adamantane-1,3-diacetic acid with N-substituted piperazines are described herein. The compounds are obtained by the reaction of the appropriate acid chloride with a monosubstituted piperazine. The compounds are useful as antiviral agents.

3,573,313

2- AND 4 - [(1-PIPERIDYL)-LOWER-ALKYLAMINO] QUINOLINES AND 2- AND 4-{N,N-BIS-[(1-PIPERIDYL)-LOWER-ALKYL]AMINO}QUINOLINES

Bernard L. Zenitz, Colonie, and Alexander R. Surrey, Albany, N.Y., assignors to Sterling Drug Inc., New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 681,087, Nov. 7, 1967, which is a continuation-in-part of application Ser. No. 433,514, Feb. 17, 1965, which in turn is a division of application Ser. No. 129,995, Aug. 8, 1961. This application Sept. 29, 1969, Ser. No. 862,001
Int. Cl. C07d *33/50*
U.S. Cl. 260—288 **12 Claims**

New 2- and 4-[(1-piperidyl)-lower-alkylamino]quinolines and 2- and 4-{N,N-bis-[(1-piperidyl)-lower-alkyl]

amino}quinolines, prepared by reacting a mono- or bis-[(1-piperidyl)-lower-alkyl]amine with a 2- or 4-haloquinoline, and having hypotensive activity.

3,573,314
SUBSTITUTED-8-QUINOLINOLS
Marjan Kolobielski, Baltimore, Md., assignor to the United States of America as represented by the Secretary of the Army
No Drawing. Filed Aug. 17, 1967, Ser. No. 662,562
Int. Cl. C07d *33/44*
U.S. Cl. 260—289 **6 Claims**

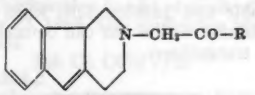
Novel 5-substituted-8-quinolinols.

3,573,315
4-CHLORO-3,5-DIMETHYLPYRIDINE HYDROCHLORIDE
Martin Jacob Handele and Johannes Kuipers, Weesp, and Kobus Wellinga, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
No Drawing. Original application Aug. 11, 1967, Ser. No. 659,856, now Patent No. 3,449,497, dated June 10, 1969. Divided and this application Nov. 14, 1968, Ser. No. 794,453
Claims priority, application Netherlands, Aug. 13, 1966, 6611424
Int. Cl. C07d *31/24*
U.S. Cl. 260—290 **1 Claim**

Use of 3 methyl or 3.5-dimethyl 4-halo pyridine or pyridine N-oxides as soil nematocides. An example is 4-chloro-3-methylpyridine N-oxide. This abstract is not intended to be a description of the invention defined by the claims.

3,573,316
2-ALKANOYLMETHYL - 1,3,4,9b - TETRAHYDRO-2H-INDENO[1,2-c]PYRIDINE SALTS AND INTERMEDIATES THEREFOR
Anton Ebnother, Arlesheim, and Jean-Michel Bastian, Birsfelden, Switzerland, assignors to Sandoz Ltd. (also known as Sandoz AG), Basel, Switzerland
No Drawing. Filed June 18, 1969, Ser. No. 834,523
Claims priority, application Switzerland, June 25, 1968, 9,435/68; Apr. 2, 1969, 5,040/69
Int. Cl. C07d *29/20*
U.S. Cl. 260—294.7 **3 Claims**

The invention concerns novel acid addition salts of compounds of formula:



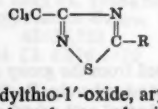
in which R signifies lower alkyl.

Processes and intermediates employed for the production of the above compounds are also described.

The above compounds possess useful antidepressant activity.

3,573,317
3-TRICHLOROMETHYL-5-SUBSTITUTED-1,2,4-THIADIAZOLES
Eric Smith, Madison, Conn., assignor to Olin Corporation
No Drawing. Filed Aug. 12, 1968, Ser. No. 751,728
Int. Cl. C07d *31/50*
U.S. Cl. 260—294.8 **3 Claims**

3 - trichloromethyl - 5 - substituted - 1,2,4 - thiadiazoles having the formula



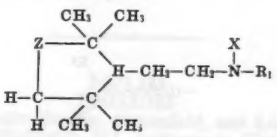
wherein R is 2'-pyridylthio-1'-oxide, aryloxy, haloaryloxy, nitroaryloxy, nitrohaloaryloxy, arylamino, haloarylamino, arylthio, carboxyarylthio, N,N-dialkyldithiocarbamoyl, arylthiazolyl or alkenylamino are prepared by reacting 3 - trichloromethyl - 5 - chloro - 1,2,4 - thiadiazole with the appropriate active hydrogen-containing compound, or a metal salt thereof. These compounds are valuable aquatic herbicides and biocides.

3,573,318
NICOTINIC ESTERS OF ACETOPHENONE DERIVATIVES
Giorgio Ferrari, Milan, and Cesare Casagrande, Como, Italy, assignors to Siphar S.A., Lugano, Switzerland
No Drawing. Filed Dec. 6, 1967, Ser. No. 688,340
Claims priority, application Belgium, Dec. 17, 1966, 46,296, Patent 690,791
Int. Cl. C07d *31/36*
U.S. Cl. 260—295.5 **3 Claims**

Nicotinic esters of ω,4-dihydroxy-3-methoxy-acetophenone which are useful for the treatment of morbid conditions arising from an increase in capillary fragility, processes for the preparation of the novel esters and pharmaceutical compositions in which the active ingredient is ω,4-dihydroxy-3-methoxy acetophenone or ω,4-mononicotinoyloxy-3-methoxy acetophenone.

3,573,319
CERTAIN N-ANILINO-ETHYL - 2,2,6,6-TETRAMETHYL - 1,2,3,6-TETRAHYDRO PYRIDINES AND DERIVATIVES THEREOF
Andrea Pedrazzoli and Gianmario Cipelletti, Milan, Italy, assignors to Société d'Etudes de Recherches et d'Applications Scientifiques et Medicales E.R.A.S.M.E., Paris, France
No Drawing. Filed Aug. 21, 1967, Ser. No. 661,810
Claims priority, application Great Britain, Aug. 23, 1966, 37,825/66; Nov. 21, 1966, 52,072/66
Int. Cl. C07d *31/42*
U.S. Cl. 260—296 **4 Claims**

The disclosure is of therapeutically useful derivatives of arylaminoethane and of a process of producing them. The compounds have the formula:



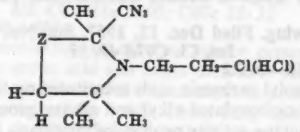
(I)

wherein:

Z represents the group $-CH_2-CH_2-$ or the group $-CH=CH-$,

R_1 is a substituted or unsubstituted phenyl, benzyl or phenethyl radical or an α-naphthyl or furfuryl radical,

X is a hydrogen atom, CH_3 or a radical COR, which latter can be $COOC_2H_5$, a saturated or unsaturated aliphatic acid residue with a straight or branched chain containing 1 to 6 carbon atoms, a saturated or unsaturated aryl-aliphatic acid residue with a straight or branched aliphatic chain containing 1 to 4 carbon atoms, a substituted or unsubstituted aromatic acid residue or a phenoxyacetic acid residue which may be substituted in its benzene ring. The method comprises reacting a compound of the formula:



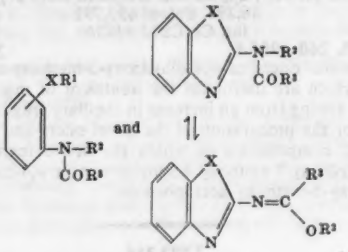
with an amine such as H_2NR or

3,573,320
CERTAIN 2-AMINOBENZOTHIAZOLES

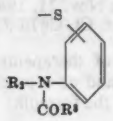
Alexander B. A. Jansen, Burnham Bucks., and John Hollowood, Henley-on-Thames, England, assignors to John Wyeth & Brother Limited, Taplow, Maidenhead, England

No Drawing. Filed July 24, 1968, Ser. No. 747,104
Claims priority, application Great Britain, Aug. 8, 1967, 36,337/67
Int. Cl. C07d *91/46*
U.S. Cl. 260—305 4 Claims

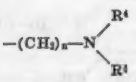
Anilides of the general formula



and acid addition salts thereof, in which X is oxygen or sulphur, R^1 is a methyl radical with the proviso that, when X is a sulphur atom, R^1 is selected from methyl radicals and radicals of the formula



R^2 is a



radical where *n* is a whole number from 2 to 3 and R^4 and R^5 each represent a hydrogen atom or an alkyl radical or together with the nitrogen atom to which they are attached complete a morpholine, piperidine, pyrrolidine or piperazine ring system, and R^3 is an alkyl, aryl, aralkyl or aralkenyl radical, are effective as anti-depressant agents.

3,573,321
BENZIMIDAZOLE-2-CARBAMATES SUBSTITUTED ON THE BENZENE RING

Constantino John Di Cuollo, Drexel Hill, James A. Miller, Malvern, and Joseph R. Valenta, Stafford, Pa., assignors to Smith Kline & French Laboratories, Philadelphia, Pa.

No Drawing. Filed Dec. 11, 1967, Ser. No. 689,340
Int. Cl. C07d *49/38*
U.S. Cl. 260—309.2 3 Claims

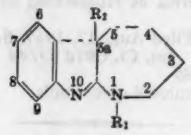
Benzimizolyl carbamic acids substituted on the benzene nucleus by carboxylated alkyl and alkoxy groups are disclosed as having activity against helminthiasis in animals. They may be prepared by microbiological oxidation of benzene ring substituted 2-carboalkoxyaminobenzimidazoles, or synthetically by starting with an appropriate p-nitrophenyl alkanoic acid.

3,573,322
POLYHYDROAZEPINO[2,3-b]INDOLES

Jackson B. Hester, Jr., Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Feb. 28, 1969, Ser. No. 803,480
Int. Cl. C07d *27/36*
U.S. Cl. 260—326.3 9 Claims

New polyhydroazepino[2,3-b]indoles of the Formula XIV:



(XIV)

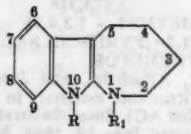
wherein R_1 is selected from the group consisting of hydrogen, ethyl and acetyl and wherein R_2 is selected from the group consisting of hydrogen, hydroxy and acetoxy with the proviso that R_2 is acetoxy only if R_1 is hydrogen or acetyl, are prepared. These compounds and their pharmacologically acceptable acid addition salts have sedative action and can be used in mammals and birds as tranquilizers.

3,573,323
1,2,3,4,5,10-HEXAHYDROAZEPINO[2,3-b]INDOLES

Jackson B. Hester, Jr., Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Feb. 28, 1969, Ser. No. 803,449
Int. Cl. C07d *27/36*
U.S. Cl. 260—326.5 9 Claims

New 1,2,3,4,5,10 - hexahydroazepino[2,3-b]indoles of the formula:



(XX)

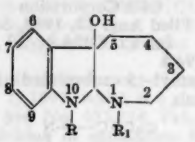
wherein R is selected from the group consisting of hydrogen, methyl, ethyl and acetyl and wherein R_1 is selected from the group consisting of ethyl and acetyl with the proviso that when R is hydrogen, R_1 is acetyl, are prepared. These compounds and the pharmacologically acceptable acid addition salts when in the amino form have sedative action and can be used in mammals and birds as tranquilizers.

3,573,324
2,3,4,5,10,10a-HEXAHYDROAZEPINO [2,3-b]INDOLES

Jackson B. Hester, Jr., Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Feb. 28, 1969, Ser. No. 803,479
Int. Cl. C07d *27/36*
U.S. Cl. 260—326.5 5 Claims

New 2,3,4,5,10,10a-hexahydroazepino[2,3-b]indoles of the formula:



(XVIII)

wherein R is selected from the group consisting of methyl, ethyl and acetyl and wherein R_1 is selected from the group consisting of ethyl and acetyl with the proviso that when R is methyl or ethyl, R_1 is acetyl, are prepared.

These compounds and the pharmacologically acceptable acid addition salts of the amines have sedative action and can be used in mammals and birds as tranquilizers.

3,573,325
N-(1-ALKYL-2-PYRROLIDYLMETHYL)-3-ALKOXY-(OR HYDROXY)-INDOLES-2-CARBOXAMIDES
Michel Léon Thominet, Paris, France, assignor to Societe d'Etudes Scientifiques et Industrielles de l'Ile-de-France, Paris, France
No Drawing. Filed July 31, 1967, Ser. No. 657,010
Claims priority, application France, July 29, 1966, 72,905; Oct. 18, 1966, 80,482
Int. Cl. C07d *27/56*
U.S. Cl. 260—326.14 7 Claims

The compounds of this invention are useful in the treatment of emesis or behavior disturbances in mammals. For example, in a mammal, the compounds may be administered orally in the form of 25 milligram tablets given in progressive doses of 2 to 8 tablets daily.

3,573,326
6-AMINO-2-THIENYL-4-CHROMANONE HYDRAZONES
Pierre Fournari, 16 Rue Reaumur; Jean Tirouflet, 25 Rue de Beauregard; and Claude Boichot, 89 Boulevard Mansard, all of Dijon, France
No Drawing. Original application Oct. 5, 1966, Ser. No. 584,366, now Patent No. 3,468,897, dated Sept. 23, 1969. Divided and this application Sept. 22, 1969, Ser. No. 871,147
Int. Cl. C07d *63/12*
U.S. Cl. 260—332.3 3 Claims

6-amino-2-phenyl or heterocyclic-4-chromanone hydrazones and the pharmaceutically acceptable nontoxic salts thereof are useful as sedatives and muscle relaxants in mammals.

3,573,327
3-(LOWER ALKOXY)-7,8,9,10-TETRAHYDRO-6H-DIBENZO-[b,d]PYRAN-6,9-DIONES AND DERIVATIVES THEREOF
Masateru Miyano, Morton Grove, Ill., assignor to G. D. Searle & Co., Chicago, Ill.
No Drawing. Continuation-in-part of application Ser. No. 731,270, May 22, 1968. This application Mar. 23, 1970, Ser. No. 22,036
Int. Cl. C07d *7/26*
U.S. Cl. 260—343.2 9 Claims

3 - (lower alkoxy) - 7,8,9,10 - tetrahydro - 6H -dibenzo[b,d]pyran-6,9-diones are obtained by cyclization of the corresponding 7-(lower alkoxy)-4-methylcoumarin 3-propionate esters. The latter compounds together with derivatives obtained by reaction at the 9 and/or 10 positions are useful pharmacological agents, e.g. anti-inflammatory and anti-protozoal.

3,573,328
5-(2-METHOXYETHYL) FURFURYL CHRYSANTHEMATE
Michio Nakanishi and Toshihiko Mukai, Oita, and Syuji Inamasu, Fukuoka, Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka, Japan
No Drawing. Filed May 28, 1968, Ser. No. 732,522
Claims priority, application Japan, June 7, 1967, 42/36,722
Int. Cl. C07d *5/20*
U.S. Cl. 260—347.4 1 Claim

5-(2-methoxyethyl)furfuryl chrysanthemate shows a stronger insecticidal activity than allethrin and as low a mammalian toxicity as naturally occurring pyrethrins, and is useful in combating a variety of insects includes common houseflies (*Musca domestica*).

3,573,329
SULFUR-CONTAINING POLYEPOXIDES
John W. Lynn, Charleston, W. Va., assignor to Union Carbide Corporation
No Drawing. Original application Mar. 11, 1964, Ser. No. 351,197, now Patent No. 3,392,186, dated July 9, 1968. Divided and this application May 1, 1968, Ser. No. 725,895
Int. Cl. C07d *1/00*
U.S. Cl. 260—348 4 Claims

Sulfur-containing polyepoxides of the formula

$$[(R)_n\text{—}\overset{+}{X}(R_1)]\text{—}O\bar{S}\bar{O}_1OR_1$$

wherein each R_1 is a monovalent substituted or unsubstituted hydrocarbon radical; X is either nitrogen, phosphorous or sulfur; n is an integer having the value equal to the valence of X; and R is a monovalent substituted or unsubstituted hydrocarbon radical containing at least one oxirane oxygen atom. The compounds of this invention are used to impart crease resistance to cotton based fabrics, wet strength improvers for paper and in addition the polyepoxides produce thermoset polymers.

3,573,330
FLUORINATED EPOXIDES
Robert E. A. Dear and Everett E. Gilbert, Morris Township, County of Morris, N.J., assignors to Allied Chemical Corporation, New York, N.Y.
No Drawing. Filed Jan. 24, 1969, Ser. No. 793,891
Int. Cl. C07d *1/16*
U.S. Cl. 260—348 3 Claims

1,2-epoxy - 3,3,3 - trifluoro-2-trifluoromethyl-propane and 1,2-epoxy - 3,3 - difluoro-2-difluoromethyl-propane useful as nematocidal fumigants.

3,573,331
EPOXIDES
James Alexander Brydon, Bloomfield, and Louis Joseph Colaianni, Waldwick, N.J., assignors to Givaudan Corporation, Clifton, N.J.
No Drawing. Continuation-in-part of application Ser. No. 426,669, Jan. 19, 1965. This application May 23, 1969, Ser. No. 827,432
Int. Cl. C07d *1/18*
U.S. Cl. 260—348 1 Claim

Novel epoxidized linalyl esters which are useful perfumistic materials and a process for their production.

3,573,332
PREPARATION OF ALIPHATIC ACIDS AND ESTERS
Donald M. Fenton, Anaheim, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.
No Drawing. Filed July 19, 1968, Ser. No. 745,967
Int. Cl. C11e *3/00*; C07c *53/32*
U.S. Cl. 260—408 5 Claims

The telomerization of ethylene in the presence of di- and tri-halo acetic acid and esters thereof is catalyzed by a palladium cyanide containing catalyst to produce chlorinated long-chain fatty acids. These fatty acids are useful for soap or detergent preparations or can be dehydrochlorinated to prepare unsaturated long-chain fatty acids. In a typical reaction, ethylene is contacted with chloroacetic acid and palladium cyanide under liquid phase conditions to prepare dichloro fatty acids.

3,573,333

LUBRICANT ADDITIVES FOR OXIDATION INHIBITION AND RUST INHIBITION

Jonathan L. Snead, Philadelphia, Joseph F. Messina, Havertown, and Henry Gisser, Philadelphia, Pa., assignors to the United States of America as represented by the Secretary of the Army

No Drawing. Continuation of application Ser. No. 613,077, Jan. 30, 1967. This application Aug. 19, 1969, Ser. No. 853,600

Int. Cl. C08h *17/36*

U.S. Cl. 260—413 **1 Claim**

New compositions of matter are provided which are useful as additives in lubricants and which are oxidatively autoinhibitive and/or rust-inhibitive, the compositions comprising substituted phenylalkanes or hydroxyarylstearic acids or salts thereof wherein the aryl groups are attached to the alkyl chain at a tertiary carbon atom.

3,573,334

OLEFINIC SILICONE-ORGANIC POLYMER GRAFT COPOLYMERS

Marshall L. Wheeler, Jr., Tonawanda, N.Y., assignor to Union Carbide Corporation

No Drawing. Continuation-in-part of application Ser. No. 356,944, Apr. 2, 1964. This application Dec. 29, 1964, Ser. No. 422,037

Int. Cl. C08g *22/44, 47/02, 47/10*

U.S. Cl. 260—448.2 **2 Claims**

Silicone-organic polymer graft copolymers produced by grafting (1) an olefinic silicone compound to (2) a non-crosslinked organic polymer consisting essentially of at least six recurring divalent monomeric units, at least one of which units contains a hydrogen atom directly bonded to an aliphatic carbon atom, said graft copolymers having been produced by heating a mixture of (1) and (2) in the presence of a free radical generator.

The graft copolymers are useful as lubricants, emulsifiers and stabilizers for urethane foams.

3,573,335

MODIFICATION OF TOLUYLENEDIISOCYANATES

Juntaro Yurimoto and Yoshindo Kojima, Nihama-shi, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

No Drawing. Filed Jan. 12, 1968, Ser. No. 697,297

Claims priority, application Japan, Jan. 20, 1967, 42/3,961

Int. Cl. C07c *19/04;* **C08g** *22/46*

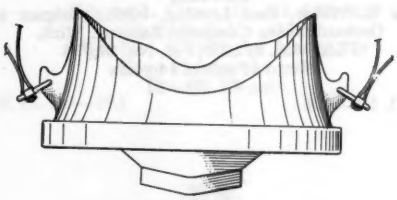
U.S. Cl. 260—453 **5 Claims**

Modified toluylenediisocyanates, which are useful for the production of rigid polyurethane foams according to one-shot method, are produced by heating toluylenediisocyanates in the presence of specific organo-tin compounds as catalysts, and the modified toluylenediisocyanates are entirely stable and precipitate no insolubles and have a viscosity of 20–300 cps. at 25° C. and have such a low freezing point as below 0° C.

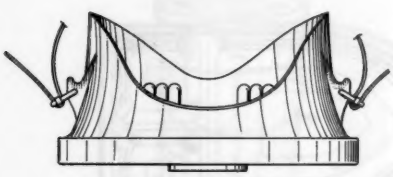
DESIGNS

MARCH 30, 1971

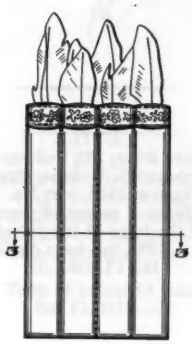
220,304
DIVING MASK
Henry S. Wolfe, Jenkintown, Pa., assignor to Sportsotron, Inc., Lynbrook, N.Y.
Filed Oct. 28, 1969, Ser. No. 19,760
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—234



220,305
DIVING MASK
Henry S. Wolfe, Jenkintown, Pa., assignor to Sportsotron, Inc., Lynbrook, N.Y.
Filed Oct. 28, 1969, Ser. No. 19,775
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—234

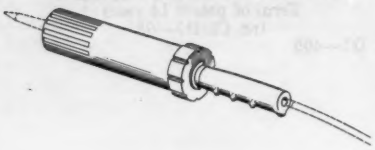


220,306
GENTLEMAN'S JACKET POCKET ORNAMENT
Guido C. Pachelli, 903 Stonewall Ave., Trinidad, Colo. 81082
Filed Oct. 13, 1969, Ser. No. 19,541
Term of patent 14 years
Int. Cl. D2—*08*
U.S. Cl. D2—400



220,307
GARDEN TOOL
Victor Jay Liechty, R.D.I. Box 246, American Fork, Utah 84003
Filed Dec. 4, 1969, Ser. No. 20,363
Term of patent 14 years
Int. Cl. D8—*01*
U.S. Cl. D8—12

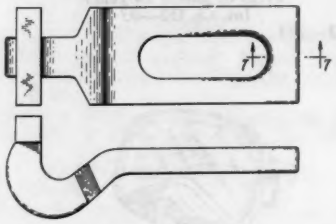
220,308
SEALANT APPLICATOR
Ralph J. Cook, Torrance, Calif., assignor to Products Research & Chemical Corporation, Burbank, Calif.
Filed Jan. 8, 1970, Ser. No. 20,826
Term of patent 14 years
Int. Cl. D8—*02*
U.S. Cl. D8—14.1



220,309
CUTTER
Theadore Baun, 231 Bellamy Road, Scarborough, Ontario, Canada
Filed June 4, 1969, Ser. No. 17,521
Term of patent 14 years
The portion of the term of the patent subsequent to Nov. 4, 1983, has been disclaimed
Int. Cl. D8—*02*
U.S. Cl. D8—52

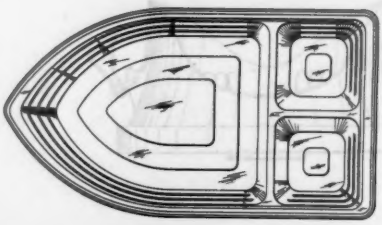
220,310
WIRE REEL
James J. Smith, 502 N. Puget St., Olympia, Wash. 98501
Filed Dec. 3, 1969, Ser. No. 20,345
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—220

220,311
CHAIN LINK
Edward A. Graetz, Pound, Wis., assignor to Graetz Manufacturing, Inc., Pound, Wis.
Filed Nov. 3, 1969, Ser. No. 19,890
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—261

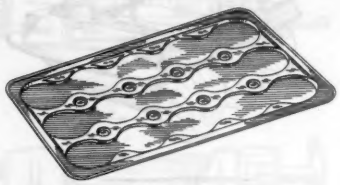


220,312
BOTTLE
Dale K. Weber, East Lansing, Mich., assignor to Orchard Grove Company, Lansing, Mich.
Filed Mar. 9, 1970, Ser. No. 21,785
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—100

220,313
PACKAGING CONTAINER
Stafford D. Collie, Kansas City, Mo., assignor to Phillips Petroleum Company
Filed Jan. 12, 1970, Ser. No. 20,893
Term of patent 14 years
Int. Cl. D9—*04*
U.S. Cl. D9—185



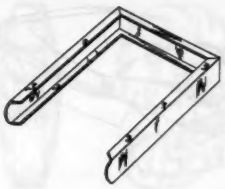
220,314
FOOD PACKAGING TRAY OR SIMILAR ARTICLE
Alex G. Dunton, Jr., Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.
Filed Feb. 16, 1970, Ser. No. 21,440
Term of patent 14 years
Int. Cl. D9—*04*
U.S. Cl. D9—187



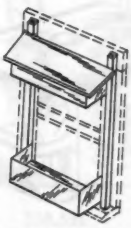
220,315
COMBINED PACKAGE AND HOLDER FOR GOLF TEES
Edward L. Cicero, 52—62 66th St., Maspeth, N.Y. 11378
Filed Nov. 6, 1969, Ser. No. 19,974
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—193

220,316
SHIPPING CONTAINER
Ralph V. Bardell, Homewood, and Roy G. Churan, Oak Lawn, Ill., assignors to Bennett Industries, Inc., Peotone, Ill.
Filed Jan. 9, 1969, Ser. No. 15,289
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—216

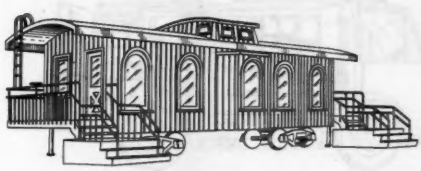
220,317
CONTAINER FOR STEREO TAPE CARTRIDGE
Robert Adell, 1525 Ardmore Drive, Birmingham, Mich. 48010
Filed June 4, 1968, Ser. No. 12,197
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—253



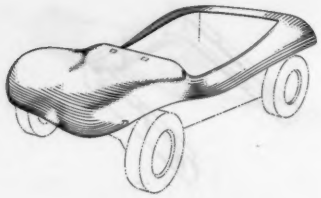
220,318
COMBINATION WINDOW AWNING AND CASE STRUCTURE
John P. Francis, 20 Boston St., Haverhill, Mass. 01830
Continuation-in-part of design application Ser. No. 13,387, Sept. 4, 1968. This application Nov. 3, 1969, Ser. No. 19,901
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D13—1



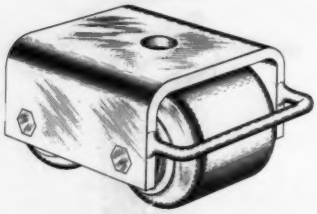
220,319
BUILDING
John C. Gruner, Grand Rapids, Mich., assignor to Casey's Caboose, Inc., Waukesha, Wis.
Filed Nov. 10, 1969, Ser. No. 20,000
Term of patent 14 years
Int. Cl. D25—*04*
U.S. Cl. D13—1



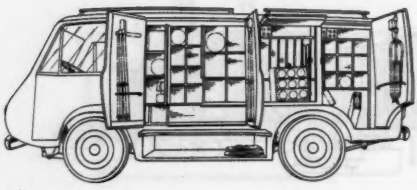
220,320
AUTOMOBILE BODY
Richard L. Dirovizza, Redwood City, Calif., assignor to Plastech Industries, Redwood City, Calif.
Filed Mar. 5, 1969, Ser. No. 16,051
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D14—3



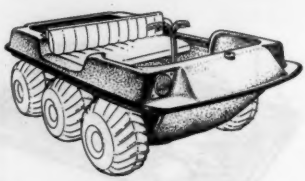
220,321
LOAD TRANSPORTING DOLLY OR THE LIKE
Wilson S. Howe, Longmont, Colo., assignor to Over-Lowe Company, Inc., Englewood, Colo.
Filed Aug. 20, 1969, Ser. No. 18,766
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D14—3



220,322
PHOTOGRAPHIC VAN
Fouad Said, Los Angeles, Calif., assignor to Fouad Said Productions Inc., Los Angeles, Calif.
Filed Aug. 27, 1969, Ser. No. 18,867
Term of patent 14 years
Int. Cl. D12—*09*
U.S. Cl. D14—3



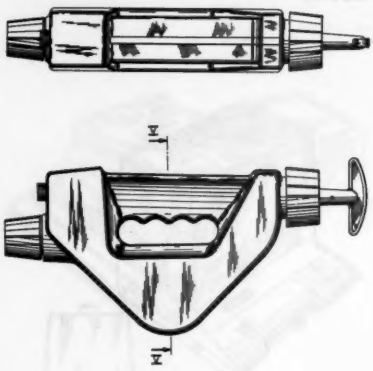
220,323
ALL TERRAIN VEHICLE
William Michael Nobbs, Clarkson, Ontario, Canada, assignor to ATV Manufacturing Limited, Clarkson, Ontario, Canada
Filed Sept. 15, 1969, Ser. No. 19,137
Term of patent 7 years
Int. Cl. D12—*08*
U.S. Cl. D14—3



220,324
LABORATORY WASH BASIN CABINET
Donald E. Ott and Arthur W. Carlson, Muskegon, Mich., assignors to E. H. Sheldon & Company, Muskegon, Mich.
Filed July 31, 1969, Ser. No. 18,488
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D16—2

220,325
ANIMAL AND PLANT CARE CABINET
Donald E. Ott and Arthur W. Carlson, Muskegon, Mich., assignors to E. H. Sheldon & Company, Muskegon, Mich.
Filed July 31, 1969, Ser. No. 18,496
Term of patent 14 years
Int. Co. D24—*02*
U.S. Cl. D16—2

220,326
HAND OPERATED FIRE EXTINGUISHER OR SIMILAR ARTICLE
Charles K. Huthsing, Jr., Old School Road, Libertyville, Ill. 60048
Filed Oct. 24, 1969, Ser. No. 19,701
Term of patent 14 years
Int. Cl. D29—*01;* D23—*01*
U.S. Cl. D16—2

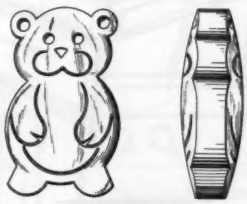


220,327
PHARMACEUTICAL TABLET OR SIMILAR ARTICLE
William S. Tripp, Allegan, Mich., assignor to L. Perrigo Company, Allegan, Mich.
Filed May 1, 1970, Ser. No. 22,752
Term of patent 14 years
Int. Cl. D28—*01;* D1—*02*
U.S. Cl. D16—3

220,328
PHARMACEUTICAL TABLET OR SIMILAR ARTICLE
William S. Tripp, Allegan, Mich., assignor to L. Perrigo Company, Allegan, Mich.
Filed May 1, 1970, Ser. No. 22,761
Term of patent 14 years
Int. Cl. D28—*01;* D1—*02*
U.S. Cl. D16—3

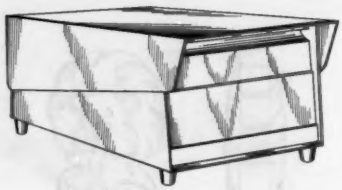
220,329
PHARMACEUTICAL TABLET OR SIMILAR ARTICLE
William S. Tripp, Allegan, Mich., assignor to L. Perriga Company, Allegan, Mich.
Filed May 1, 1970, Ser. No. 22,762
Term of patent 14 years
Int. Cl. D28—*01;* D1—*02*
U.S. Cl. D16—3

220,330
PHARMACEUTICAL TABLET OR SIMILAR ARTICLE
William S. Tripp, Allegan, Mich., assignor to L. Perrigo Company, Allegan, Mich.
Filed May 1, 1970, Ser. No. 22,766
Term of patent 14 years
Int. Cl. D28—*01;* D1—*02*
U.S. Cl. D16—3

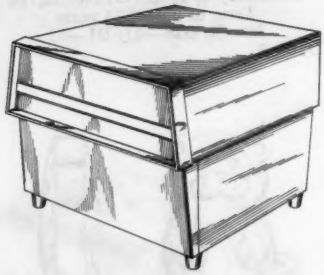


220,331
HEATED HANDLE FOR SPORTING EQUIPMENT OR SIMILAR ARTICLE
Eugene V. Plumb, 8513 Country Homes Blvd. 99208, and Zeno E. Mackay, 12414 E. 8th 99216, both of Spokane, Wash.
Filed Aug. 1, 1969, Ser. No. 18,505
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—23

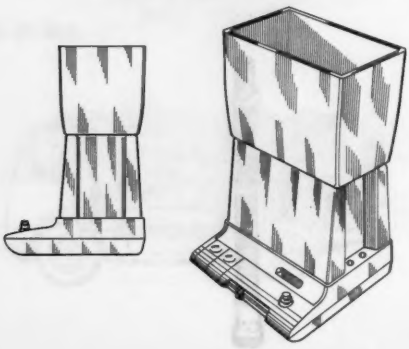
220,332
GAS FIRED WATER HEATER
George W. Myler, 1487 Langston Drive, Columbus, Ohio 43220
Filed Feb. 3, 1970, Ser. No. 21,226
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—86



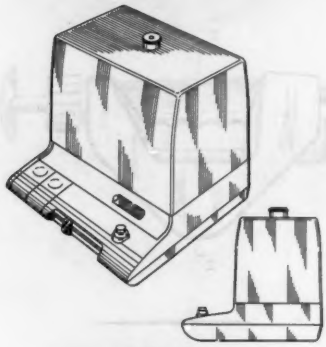
220,333
GAS FIRED WATER HEATER
George W. Myler, Columbus, Ohio, assignor to Columbia Gas System Service Corporation, New York, N.Y.
Filed Feb. 3, 1970, Ser. No. 21,235
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—86



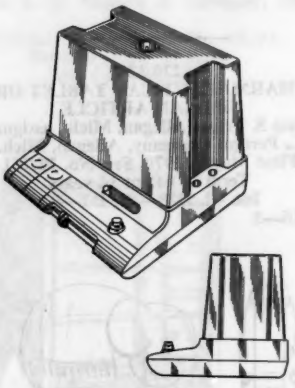
220,334
COMBINED DENTAL JET CLEANSING UNIT OR THE LIKE AND RESERVOIR THEREFOR
Frederick Gordon Mackay, Tarzana, Calif., Keith M. Mullins, Fort Collins, Colo., and Allan B. Johnson, Tarzana, Calif., assignors to Aqua Tec Corporation, Fort Collins, Colo.
Filed Jan. 14, 1970, Ser. No. 20,912
Term of patent 14 years
Int. Cl. D24—*03*
U.S. Cl. D24—1



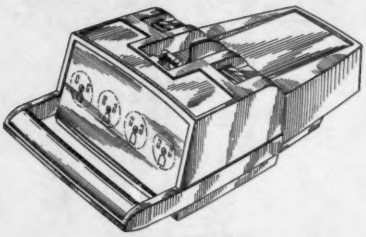
220,335
MOTOR PUMP HOUSING FOR A DENTAL JET CLEANSING UNIT AND COVER THEREFOR
Allan B. Johnson, Tarzana, Calif., Keith M. Mullins, Fort Collins, Colo., and Frederick Gordon Mackay, Tarzana, Calif., assignors to Aqua Tec Corporation, Fort Collins, Colo.
Filed Jan. 14, 1970, Ser. No. 20,913
Term of patent 14 years
Int. Cl. D24—*03*
U.S. Cl. D24—1



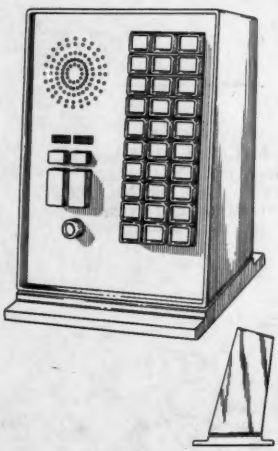
220,336
MOTOR PUMP HOUSING FOR A DENTAL JET CLEANSING UNIT OR THE LIKE
Keith M. Mullins, Fort Collins, Colo., and Frederick Gordon Mackay and Allan B. Johnson, Tarzana, Calif., assignors to Aqua Tec Corporation, Fort Collins, Colo.
Filed Jan. 14, 1970, Ser. No. 20,914
Term of patent 14 years
Int. Cl. D24—*03*
U.S. Cl. D24—1



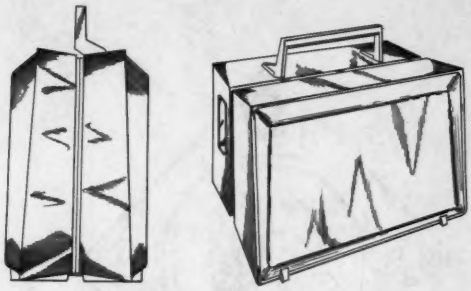
220,337
PORTABLE ELECTRICAL GROUND FAULT INTERRUPTER
Ernest R. Carlson, Fairfield, Conn., assignor to Harvey Hubbell Incorporated, Bridgeport, Conn.
Filed Mar. 11, 1970, Ser. No. 21,850
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13



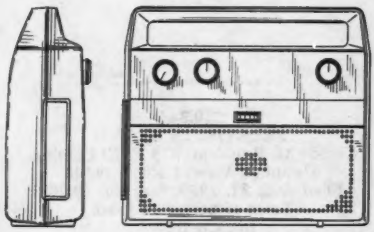
220,338
DESK TOP CONTROL ENCODER OR SIMILAR ARTICLE
Arnold S. Goldman, Hinsdale, Rudolph W. Krolopp, Palatine, and Martin C. Stessel, Schaumburg, Ill., assignors to Motorola, Inc., Franklin Park, Ill.
Filed Oct. 20, 1969, Ser. No. 19,637
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14



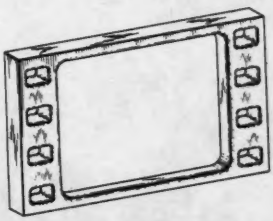
220,339
PORTABLE CARTRIDGE TAPE PLAYER
Takeshi Sasaki, Tokyo, Japan, assignor to Motorola, Inc., Franklin Park, Ill.
Filed Jan. 7, 1970, Ser. No. 20,800
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14



220,340
PORTABLE CARTRIDGE TAPE PLAYER
Takeshi Sasaki, Tokyo, Japan, assignor to Motorola, Inc., Franklin Park, Ill.
Filed Jan. 7, 1970, Ser. No. 20,801
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14

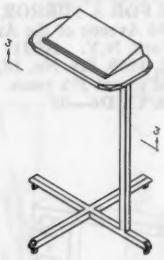


220,341
FRAME FOR A MIRROR
Sydney Cash, 496 Avenue of the Americas, New York, N.Y. 10011
Filed Aug. 6, 1969, Ser. No. 18,554
Term of patent 3½ years
Int. Cl. D6—*06*
U.S. Cl. D29—20

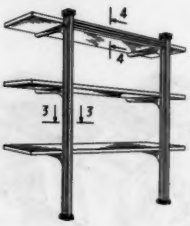


220,342
PLAQUE
Bert Rodney Anderson, Golf Road, Reading, Pa. 19601
Filed Mar. 7, 1969, Ser. No. 16,115
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—23

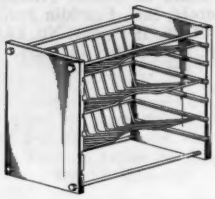
220,343
TELEVISION STAND
Claude M. Boissicat, 870 E. El Camino, Mountain View, Calif. 94040
Filed Aug. 21, 1969, Ser. No. 18,782
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D33—3



220,344
BOOKSHELF UNIT
Orestes M. Davey, Hartford, Conn., assignor to The Stanley Works, New Britain, Conn.
Filed Sept. 9, 1969, Ser. No. 19,073
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D33—3



220,345
SHEET MUSIC STORAGE RACK
Pamela E. Burke, Boise, Idaho
(1153 Norton, Idaho Falls, Idaho 83401)
Filed Nov. 5, 1969, Ser. No. 19,946
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D33—3

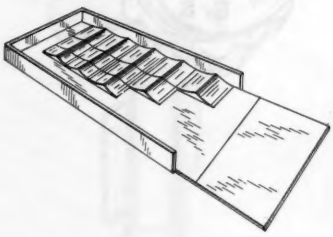


220,346
TOY FIGURE
John B. McCorkle, 442 Bristol St., Brooklyn, N.Y. 11212
Filed Oct. 15, 1969, Ser. No. 19,568
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—2

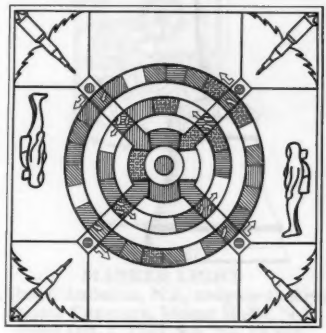
220,347
TOY FIGURE
John B. McCorkle, 442 Bristol St., Brooklyn, N.Y. 11212
Filed Oct. 15, 1969, Ser. No. 19,569
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—2

220,348
TOY FIGURE
John B. McCorkle, 442 Bristol St., Brooklyn, N.Y. 11212
Filed Oct. 15, 1969, Ser. No. 19,570
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—2

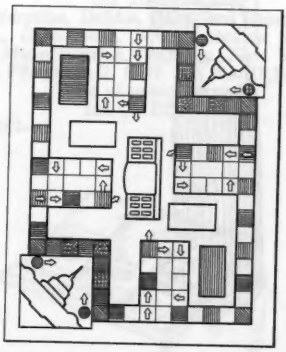
220,349
GAME BOARD
Russell E. Holt, Detroit Lakes, Minn., assignor of a fractional part interest to Robert W. Irvine, Detroit Lakes, Minn.
Filed Mar. 7, 1969, Ser. No. 16,119
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5



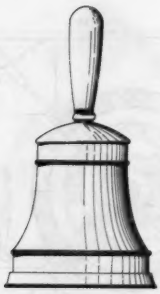
220,350
GAME BOARD
John W. Hankins, 6542 Grove Wood Lane, Houston, Tex. 77008
Filed Apr. 13, 1970, Ser. No. 22,410
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5



220,351
GAME BOARD
John W. Hankins, 6542 Grove Wood Lane, Houston, Tex. 77008
Filed Apr. 14, 1970, Ser. No. 22,503
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5

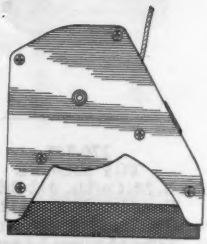


220,352
MUSICAL EDUCATIONAL TOY
Wesley E. Sharer, Chicago, Ill., assignor to Playskool, Inc., Chicago, Ill.
Filed Nov. 10, 1969, Ser. No. 19,988
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—15

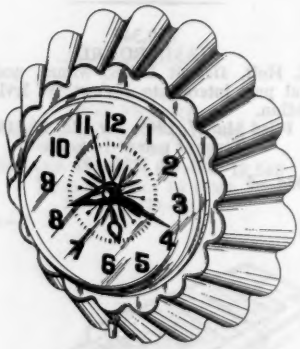


220,353
LOWER CYLINDER FOR DIESEL PILE DRIVER
Christopher William Bermingham, Dundas, Ontario, and Fred Kirkpatrick, Waterdow, Ontario, Canada, assignors to Berminghammer Corporation Limited, Hamilton, Ontario, Canada
Filed June 30, 1969, Ser. No. 17,958
Claims priority, application Canada June 28, 1969
Term of patent 14 years
Int. Cl. D15—*04*
U.S. Cl. D41—1

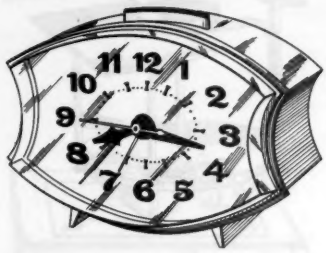
220,354
DESCENT BRAKE
George K. Russell, Castle Rock, Ronald L. Criley, Evergreen, and Richard H. Frost, Littleton, Colo., assignors to Frost Engineering Development Corporation, Englewood, Colo.
Filed July 3, 1969, Ser. No. 18,048
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D41—1



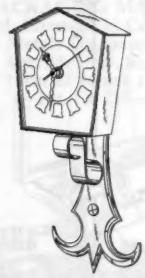
220,355
CLOCK OR SIMILAR ARTICLE
William V. Judson, Westport, Conn., assignor to General Electric Company
Filed Mar. 13, 1970, Ser. No. 21,899
Term of patent 3½ years
Int. Cl. D10—*01*
U.S. Cl. D42—7



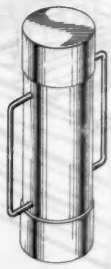
220,356
CLOCK OR SIMILAR ARTICLE
William V. Judson, Westport, Conn., assignor to General Electric Company
Filed Mar. 23, 1970, Ser. No. 22,034
Term of patent 3½ years
Int. Cl. D10—*01*
U.S. Cl. D42—7



220,357
CLOCK
Waldemar Blessing, Waldkirch im Breisgau, Germany, assignor to Blessing Werke KG, Waldkirch im Breisgau, Germany
Filed Mar. 31, 1970, Ser. No. 22,133
Claims priority, application Germany Jan. 15, 1970
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D42—7

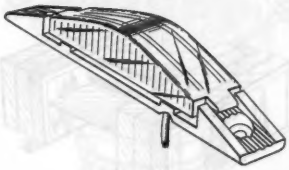


220,358
INSULATED CARRIER FOR MULTIPLE FOOD CONTAINERS OR THE LIKE
Homer G. Bewley, 1731 Mountain View Drive, Boise, Idaho 83705
Filed Aug. 26, 1969, Ser. No. 18,850
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D44—1

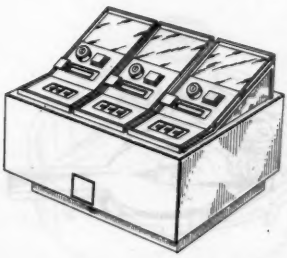


220,359
CANISTER
Joan G. Stevens, New York, N.Y., assignor to Pantry Queen Products Inc., Brooklyn, N.Y.
Filed Apr. 14, 1970, Ser. No. 22,422
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—6

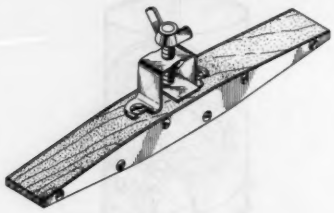
220,360
MARKER LIGHT
Robert R. Rossi, Audubon, N.J., assignor to Arrow Safety Device Company, Mount Holly, N.J.
Filed Oct. 1, 1969, Ser. No. 19,369
Term of patent 14 years
Int. Cl. D12—*99*
U.S. Cl. D48—32



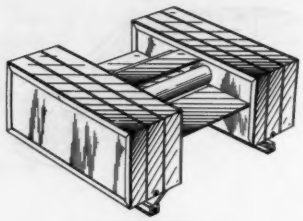
220,361
PRESET CONSOLE FOR A SERVICE STATION OR THE LIKE
Terry J. Simpkins, Dublin, Ohio, and George D. Robinson, Jr., Greensboro, N.C., assignors to Gilbert & Barker Manufacturing Company, New York, N.Y.
Filed Sept. 2, 1969, Ser. No. 18,941
Term of patent 14 years
Int. Cl. D20—*99*
U.S. Cl. D52—2



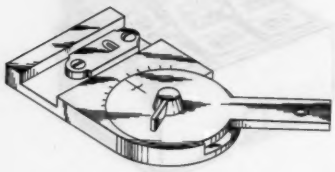
220,362
GAUGE LOCK FOR A RULE
Raymond P. Ricker, 20 Bartlett Ave., Somersworth, N.H. 03878
Filed Nov. 21, 1969, Ser. No. 20,210
Term of patent 14 years
Int. Cl. D10—*08*
U.S. Cl. D52—6



220,363
LAMINATING APPARATUS OR SIMILAR ARTICLE
Henry N. Staats, Deerfield, Ill., assignor to General Binding Corporation, Northbrook, Ill.
Filed Nov. 13, 1969, Ser. No. 20,061
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D55—1

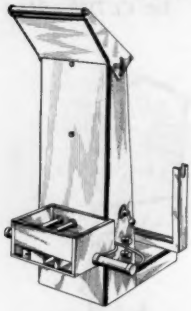


220,364
VERTICLE SCALE FOR DRAFTING MACHINES
Robert E. Pough, 414 Brookdale Drive, Boise, Idaho 83702
Filed Feb. 16, 1970, Ser. No. 21,451
Term of patent 14 years
Int. Cl. D10—*08*
U.S. Cl. D52—6

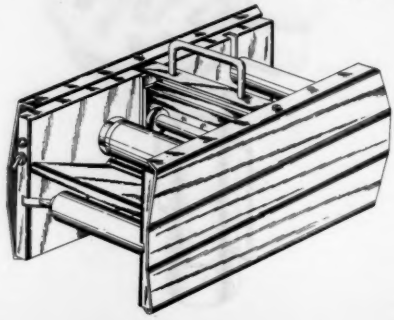


220,365
POTTER'S WHEEL
Paul E. Soldner, P.O. Box 917, Aspen, Colo. 81611
Filed Sept. 5, 1969, Ser. No. 19,043
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D55—1

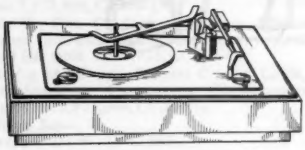
220,366
WRAPPING MACHINE
Raymond J. Dwyer, 4737 Secor Road, Toledo, Ohio 43623
Filed Nov. 17, 1969, Ser. No. 20,157
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D55—1



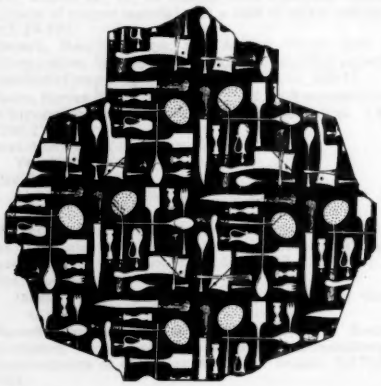
220,367
LAMINATOR
Frederick O. Bley, Reston, Va., assignor to Optical and Electronics Research, Inc., Reston, Va.
Filed Mar. 24, 1970, Ser. No. 22,040
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D55—1



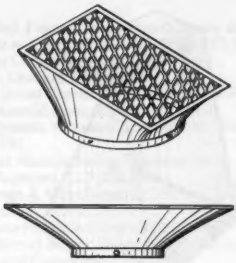
220,368
COMBINED PHONOGRAPH TURNTABLE AND BASE OR SIMILAR ARTICLE
Lawrence Levow, Huntington, N.Y., assignor to Harman-Kardon Incorporated, Plainview, N.Y.
Filed Oct. 15, 1969, Ser. No. 19,574
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D56—4



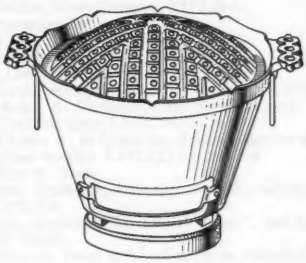
220,369
PACKAGING MATERIAL
John E. Stengel, Chesterfield County, Va., assignor to Reynolds Metals Company, Richmond, Va.
Filed Apr. 25, 1969, Ser. No. 16,895
Term of patent 14 years
Int. Cl. D5—*03*
U.S. Cl. D59—2



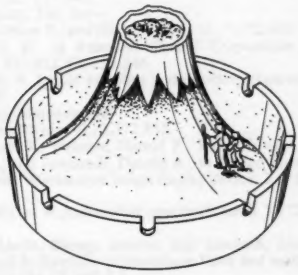
220,370
DETACHABLE COOKING GRILL FOR A HEATER OR THE LIKE
Marvin H. Mason, Bedford, Ind. 47421
Filed May 21, 1969, Ser. No. 17,262
Term of patent 14 years
Int. Cl. D7—*04*; D23—*03*
U.S. Cl. D81—10



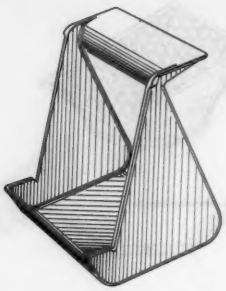
220,371
HIBACHI STOVE
George J. Strauss, 6606 10th Ave., Los Angeles, Calif. 90043
Filed Jan. 21, 1970, Ser. No. 21,024
Term of patent 3½ years
Int. Cl. D7—*04*
U.S. Cl. D81—10



220,372
ASH TRAY
Harry W. Hollister, New York, N.Y., assignor of a fractional part interest to Betty Mabel Coester, New York, N.Y.
Filed Nov. 14, 1969, Ser. No. 20,095
Term of patent 14 years
Int. Cl. D27—*03*
U.S. Cl. D85—2



220,373
GRATER BIN OR THE LIKE
Kurt Krusche, Frankfurt, Germany, assignor to Hutzler Manufacturing Company, Long Island City, N.Y.
Filed July 30, 1969, Ser. No. 18,475
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D89—1



220,374
ELECTRIC SHAVER
Taisuke Ono, Hiroyuki Nishimura, and Yoritaka Ikejima, Osaka, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan
Filed Sept. 25, 1969, Ser. No. 19,300
Claims priority, application Japan Mar. 28, 1969
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D95—3

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Carrega, Marc E., to Produits Chimiques Pechiney-Saint-Gobain. Method for mass polymerizing vinyl chloride based polymers at low temperature. 3,573,269, Cl. 260-92.8

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Cutts, Ernest M., Sr.; and Cutts, Ernest M., Jr. Adjustable angulated conveyor system in which hold down rollers are employed to secure a ridged belt to channeled pulleys. 3,572,496, Cl. 198-109.

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Yuki, Etsuji. Method of preventing the deterioration of frying oils in frying apparatuses and a hood for use on such apparatuses. 3,573,059, Cl. 99-1.

Yurimoto, Juntaro; and Kojima, Yoshindo, to Sumitomo Chemical Company, Ltd. Modification of toluylenediisocyanates. 3,573,335, Cl. 260-453.

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Zola, John C. Decorative finish-producing composition and method of applying same. 3,573,237, Cl. 260-16.

Zschocke, Albrecht; Koenig, Karl-Heinz; and Fischer, Adolf, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. 4,6-Bis-(alkynylamino-s-triazines. 3,573,302, Cl. 260-249.8

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TO WHOM

PATENTS WERE ISSUED ON THE 30TH DAY OF MARCH, 1971

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Wilson, Roger E. Re. 27,111.
Bentley Laboratories, Inc.: *See*—
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Cate, Dexter E., to Buzzards Corporation. Bridge circuit for determining the inverse of resistance. Re. 27,103, 3–30–71, Cl. 318—663.
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De Wall, Richard A., to Bentley Laboratories, Inc. Oxygenator with heat exchanger. Re. 27,100, 3–30–71. Cl. 23—258.5.
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Johnson, Ralph B., Jr., and Goodwin. Re. 27,108.
Henderson, Robert B., to AMF Incorporated. Athletic game ball. Re. 27,106, 3–30–71. Cl. 273—65.
Johnson, Ralph B., Jr., and J. E. Goodwin, to Sentinel Distributors, Inc. Electronic actuator for an engine protective system. Re. 27,108, 3–30–71, Cl. 123—198.
Levesque, Charles L., to Rohm & Haas Company. Drug composition. Re. 27,107, 3–30–71. Cl. 424—22.
Maynard, George A., to Textron Inc. Fastener driving apparatus. Re. 27,101, 3–30–71, Cl. 227—8.
Nakamura, Katsuro, to Toko Kabushiki Kaisha. Magnetic memory device. Re. 27,099, 3–30–71. Cl. 340—174.
Rohm & Haas Company: *See* —
Levesque, Charles L. Re. 27,107.
Sentinel Distributors, Inc.: *See*—
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Textron Inc.: *See*—
Maynard, George A. Re. 27,101.
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Nakamura, Katsuro. Re. 27,099.
U.S. Industries, Inc.: *See*—
Van Huis, Robert L. Re. 27,102.
U.S. Philips Corporation: *See*—
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Valyi, Emery I. Apparatus for blow molding seamless hollow objects. Re. 27,104, 3–30–71. Cl. 18—5.
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Videen, Otis R., to Conwed Corporation. Method and apparatus for producing special surfaces on panel board. Re. 27,-109, 3–30–71. Cl. 117—10.
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Arrow Safety Device Co.: *See*—
Rossi, Robert R. 220,360.
Bardell, Ralph V. and R. G. Churan, to Bennett Industries, Inc. Shipping container. 220,316, 3–30–71, Cl. D9—216.
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Cash, Sydney. Frame for a mirror. 220,341, 3–30–71, Cl. D29—20.
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Graetz, Edward A., to Graetz Manufacturing, Inc. Chain link. 220,311, 3–30–71, Cl. D8—261.
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ISSUED MARCH 30, 1971

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54 : 3,573,081
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55 : 3,572,443
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3,572,763
3,572,811
3,573,062
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3,573,125
3,573,154
3,573,162
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56 : 3,572,856
3,572,873
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Design Patents

6 : 220,308
220,320
220,322
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8 : 220,306
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49 : 220,307
51 : 220,314
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53 : 220,310
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55 : 220,311

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